CDC in plans for revitalising city centres

FURTHER enhancing its image as the concerned computer company, Control Data has formed a new $3 million company, City Venture Corp, which will plan and manage programmes aimed at providing employment and revitalising depressed inner-city areas.

City Venture, in which Control Data will have the largest shareholding, arises out of a desire to desseminate more widely the expertise that Control Data has gained in ventures established in the depressed parts of Washington DC, Minneapolis, St Paul as well as the depressed rural area of Compton, Kentucky.

Projects are initially being considered in Minneapolis, St Paul, Philadelphia, Atlanta, Detroit, Baltimore, St Louis, Chicago and Flint, Michigan.

The key drive will be to provide employment in depressed inner-city areas and Control Data has consistently concerned itself with all aspects of the social environment rather than simply opening plants and waiting for employees to show up. The Plato computer-based education and training system operated by Control Data will be used.

Control Data opened its first plant in an inner city area a decade ago, to make disc and tape controllers and core chassis. The plant is on the north side of Minneapolis and has consistently been a top performer in manufacturing efficiency and quality. It has a child-care centre to look after employees' infants, pre-school children and school-age children before and after school hours, enabling heads of one-parent families to work at the plant.

Two projects have also been initiated to assist Native Americans (Red Indians). One involves medical care in the large Rosebud Sioux reservation in South Dakota, and the other is a data preparation plant in northern Manitoba, Canada.

NEWS IN BRIEF

Jimmy makes buying easy

INDEPENDENT purchase of telecommunications equipment by US government agencies may be made easier if the recommendations of a report by the President's telecommunications reorganisation study group are implemented.

The group recommends that the General Services Administration continues to buy common-user equipment, but that other agencies should no longer require GSA approval for their own specialised or dedicated telecommunications equipment.

M-series launch

LATEST of the Fujitsu M-series to be announced in Australia is the M-160S, which slots in below the original M-160 model, now known as the AD, and is a direct competitor for Hitachi's M-150. It joins the M-160AD, M-18011 and M-190 on the Australian market. The CPU is built out of compact 600 gate per chip TTL integrated circuits, and the memory chips are 16K bits.

Martin 'first'

CALLED Computer Networks and Distributed Processing the first report in the James Martin Public Report Series by the database expert is now avilable for $275 from its publishers, Burler Cox and Partners Ltd, Morley House, 26-30 Holbord Viaduct, London EC1A 2BP. Tel: 01-353 1138.

ECG research

USING a £180,000 grant from the Scottish Home and Health department, Glasgow University's department of medical cardiology is to develop a new type of computer-based electrocardiogram interpretation system.

Info technology now vital to Third World

INFORMATION technology is now seen as a vital ingredient in the growth of Third World countries and the whole subject of the role of informatics in developing countries "will never again be treated in the casual way that it has in the past."

That is the view of Reay Atkinson, the leader of the UK delegation to the Spin Intergovernmental Conference on Strategies and Policies for Informatics held in Torremolinos last week.

Atkinson, who is soon to take responsibility at the Department of Industry for its computers and electronics activities, told Computer Weekly that the whole delegation had been encouraged by what they had seen and heard.

"The fact that the conference brought together so many representatives, including several government ministers, for such a long time, gives the subject a significance it has never had before.

The UK initiative offering training facilities to foreign governments (CW, September 7) was well-received. "We got a number of inquiries, and we will be developing contacts over the next few weeks," said Atkinson.

Although observers from political groups such as the South West African Peoples' Organisation (Swapo) and Palestine Liberation Organisation were present, Atkinson said: "There were hardly any polemics and no political issues. The conference was noteworthy for the responsible way it tackled the subject.

The UK turned out to be the only country to send a mixed delegation, with representatives from industry as well as government. "All the other delegations were composed entirely of civil servants, and our approach was regarded as a good one."

The main need now was to decide which international body is the most appropriate framework for disseminating assistance. Principle candidates are the Inter-governmental Bureau for Informatics — which organised the conference — and Unesco. No decision has yet been taken on whether the UK should join IBI.

Atkinson

Mexican mission shows way

THE [illegible] computing mission to Mexico later this month (CW, September 7) provides a good example of the UK approach to assisting developing countries in the field of information technology — joint government and industry plans and action, with an emphasis on education and training.

The visit is at the request of the Mexican government and will include delegates from the Department of Industry, ICL and the Computing Services Association. It has been co-ordinated by the CSA international marketing sub-committee, chaired by Donald Moore.

"We would like to help the Mexicans to develop the framework within which they can educate and develop the staff they need," said Moore. "A symposium will be presented to the whole range of government departments and nationalised industries, notably energy." Moore is particularly impressed with the support given to the CSA initiative from the Department of Industry and the Foreign Office.

GINO chosen

THE Computer Aided Design Centre's GINO graphics system has been acquired by Fokker-VFW by in the Netherlands, and by both the Swedish and Danish Highway Authorities. The hardware to be used is a DECsystem-10, a Univac 1100/11, and a Burroughs 6700 respectively. Installation of the software in Holland and Sweden was undertaken by Applied Graphics Systems bv, of The Hague.

New Itel threat to IBM 370s

ADDING to the bottom end of its Advanced System series of IBM plug compatible machines, Itel has introduced two machines, the AS/3 Model 4 and the AS/4 Model R. The latter is a simplified and less expensive version of the existing AS/4 and was developed primarily for the European market.

According to Itel, the performance of the AS/3 Model 4 is rated equal to the IBM 370/148, while the AS/4 Model R is rated 1.4 times the performance of the 148. Both machines have 16K memory chips and with one Megabyte the AS/3 Model 4 costs $625,000, while the AS/4 Model R is priced at $750,000. Both machines can have up to four Megabytes.

Itel confirms that the two new machines are built by National Semiconductor, the firm that builds the existing AS/4 and AS/5 models, but stresses that they are not related to the System 400 processor announced by National Semiconductor earlier this year (CW, May 11).

However, industry sources indicate that Itel will start selling a range of machines based on the System 400 to compete directly with the IBM E Series after the latter is unveiled. The System 400 is IBM 370 compatible and built around eight four-bit slice microprocessor chips.

Modcomp plant

A FACTORY that should be manufacturing the majority of systems sold by Modcomp in Europe within the next two years is to be opened by the company at Wokingham, Berkshire, at the end of this year.

Poly DP department averts closure threat

THE upgrade of its computer system to a Univac 1110 (CW, May 4) and the taking on of additional staff has helped to keep Teesside Polytechnic's computer department operational, although there is still "some danger" that it might not be able to meet demand in the new academic year.

Commenting on a report in the Sunday Times that the computer service at Teesside was in "immediate danger" of collapse, John Lindley, head of the computer department, said: "staff shortages and limited accommodation problems are rapidly being resolved."

Presently, there are 28 staff and another six, including a deputy head of department, will shortly be taken on. Also, a new computer room has been built.

"There may be some problems as the new academic year gets under way, but we see no long-term difficulties."

Database launched for TI minis

A DATABASE management system has been announced by Texas Instruments for its DS990 business computer systems. Called DBMS-990, the software runs on the company's DS990 Model 6 or Model 8 disc-based systems.

The system includes a high-level data definition language and a data manipulation system accessible from Cobol. It supports up to 10 concurrent users, and offers selective password security of specific data down to the lowest level.

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COMPUTER WEEKLY

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Briefing

CDC scraps Pegasus

PLANS to market an IBM 3270-compatible display terminal have been scrapped by Control Data in the US before the product, called the C-760, reached Europe. The C-760, which was unveiled at the National Computer Conference in Anaheim in June, was based on a Zilog Z80 microprocessor and also came in an OEM version called Pegasus which was to have been sold by the marketing teams currently being set up by CDC to sell peripherals for use with IBM Series 1 minicomputers.

Several systems houses in the US already had orders placed with CDC for Pegasus when it was killed. A CDC spokesman said that, following an analysis of test market results, the product was "not able to meet market needs."

Slimmer MVS

A SLIMMED-DOWN MVS for the IBM E-series and moves to make operating system source code inaccessible to the user are among the operating software plans being laid by IBM. So says Dick Bayles, in charge of operating system design at National CSS. Speaking at the Infotech "IBM: The Next Five Years" conference last week, Bayles also predicted that users would get their operating software as an Installation Productivity Option, IPO, specifically tailored to their configuration. Conference report, page 11.

System 34 enhanced

A COMMUNICATIONS package called System Support Program Interactive Communication Feature, SSPICS, that enables a network of IBM System 34 computers to interact with a host mainframe is one of a group of enhancements to System 34 just announced by IBM.

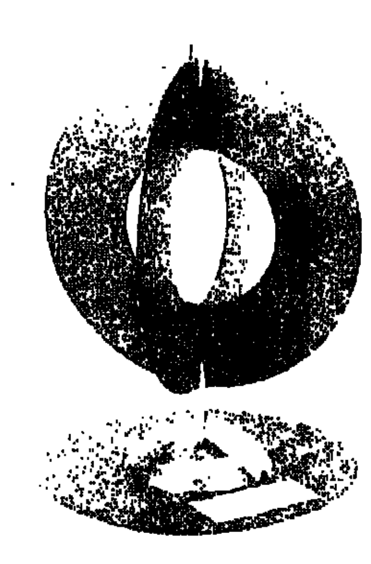
Two other software enhancements are support for Cobol and a workstation support routine that simplifies Cobol and Assembler programming. Hardware enhancements include a magnetic stripe card reader that attaches to a System 34 display station, a multinational character set for display stations and printers and the addition of OCR-A fount to the IBM 5211 Model 2 printer.

Graphics deal

AGREEMENT has been reached between Insac and Calcomp for the joint development of applications software for Calcomp's new IGS 500 interactive graphics system (see page 15). Insac and Calcomp will jointly share the revenue from the software for which the original work will be done by Insac member Systems Programming Ltd.

IBM cuts prices

PURCHASE price reductions of about 20% have been made by IBM in the US to the 3411 line printer and all models of the 3410 and 3411 tape drive ranges.



Computapots

These unique trophies have been specially designed for the Computastars team champions. Constructed of elements from a disc pack and polished chrome, they have been presented by the Ferguson-Francis consultancy partnership, and will be held for a year by the winning teams in the first Computastars finals Full details, page 2.

Anti-ICL case for Brussels

TWO manufacturers of compatible memory and disc equipment for ICL computers, Systems Reliability Ltd and Teknos Management, are complaining to the EEC Commission in Brussels about what they regard as ICL's highly restrictive practices in the area of non-ICL attachments to its users' systems.

SRL and Teknos both lodged complaints with the Office of Fair Trading in London last year about ICL's policies towards foreign attachments, but as yet the OFT has made no firm moves towards resolving the problem, and Teknos says that it has abandoned all hope of the OFT doing anything to help its cause.

Teknos says that one of its potential customers is now taking legal action against ICL because of the latter's policy towards disc attachments, which demands that a user has at least one ICL controller and two ICL drives. The user involved wanted to replace its EDS 60 subsystem with a Teknos disc system that supports 200 Megabyte drives and works out considerably cheaper than ICL equipment.

According to Teknos, ICL changed its disc attachment policy last year to allow users to replace all their ICL kit with non-ICL equipment, but returned to its original policy early this year. ICL insists that it has never changed its policy.

Teknos is now following the lead of add-on memory manufacturer Systems Reliability, which first wrote to the EEC directorate of restrictive practices in Brussels in March, and which is currently preparing a document countering arguments that ICL made to the directorate following its complaint.

SRL's main complaint against ICL is that it refuses to supply a user with a store extension unit by itself, if the user wants to install add-on memory from an independent supplier. In addition, ICL will withdraw maintenance completely if the supplier attempts to add memory using his own methods.

SRL points out that ICL has supplied a store extension unit alone to at least two of its users, and offered the unit to at least one other, despite its stated policy.

The independent suppliers' attempts to sell to ICL users have also been thwarted by ICL's policy of demanding a compensatory levy from a user — normally 20% of the rental cost of the equivalent ICL kit — if they install non-ICL equivalent.

KO the jobs problem!

FROM October 5, Computer Weekly readers in London should turn on to Capital Radio each Thursday evening and Friday breakfast-time to find out about some of the jobs that appear in Computer Weekly.

Over 46,000 Computer Weekly readers are in the Capital listening area. By leading with the radio announcement supported by the printed ad in the paper, Computer Weekly offers DP employers a unique one-two attack to help KO the computer recruitment problem.

More details, page 43.

Universities 'should teach micro uses'

UNIVERSITIES should be establishing special facilities for the teaching of microprocessor applications, according to a proposal put forward by a senior lecturer at Salford University, echoing the views of an increasing number of academics. There need to be, it is claimed, centralised pools of equipment and expertise, and laboratory space, so students from all faculties, science, engineering, and the arts can learn to use microprocessors to the full without wasteful duplication of effort.

Dr F. N-Nagy, of the Electrical Engineering Department at Salford, has produced a detailed proposal for turning a former KDF-9 lab into a workshop for microprocessor projects, complete with development aids and a stock of processors. A comprehensive curriculum on micros has also been drawn up, aimed at keeping students up to date with this fast-changing field.

Dr Jim Alty of Liverpool University agrees wholeheartedly that it is very important that universities set up this sort of capability so that a wide range of students can "get their hands dirty". To teach the exploitation of micros properly, he says, there must be a central facility with specimen kits, development aids, logic analysers, and a range of software. If separate departments all try to "do their own thing", he suggests, the equipment will rapidly become out of date.

Students in chemical and mechanical engineering, physics, and medicine all need experience in using micros nowadays, Alty says. He adds that the micro facility should be run by the computer centre, not by the electrical engineering department, which is not experienced in providing services.

Dr John Larmouth, computer centre director at Salford is, however, happy to see the proposed micro centre run by the electrical engineering department, and one of his staff is cooperating in its design.

SBS licence withdrawn

THE US Court of Appeals has withdrawn Satellite Business Systems' operating licence because, the three judges said, the Federal Communications Commission should have held a hearing on the anti-competitive effects of the SBS partnership between IBM, Comsat and Aetna Casualty and Surety before granting the licence in January 1977.

The FCC's arguments, which were over-ruled, were firstly that the domestic satellite industry is too new and experimental to produce useful evidence, and secondly that satellite communications is not a separate market since it is interchangeable with terrestrial communications.

SBS and SNA, see page 11.

Micro revolution: calls for action

LACK of awareness and understanding of the impact of information technology, particularly microelectronics, has led to calls during the past week for government departments to re-examine the implications of the new technology on the educational system and the establishment of an ongoing Royal Commission on the subject.

And the TUC is planning to hold a major conference next spring to examine in detail the long-term effect of the so-called "micro revolution." The recommendation about education and training has been made by the working party on the applications of semiconductor technology of the Advisory Council for Applied Research and Development, which was one of three working parties established earlier this year by the Prime Minister to examine the industrial and social impact

● Turn to page 15

Full report on Jenkins and Booth, page 3.

COMPUTER WEEKLY'S INSIDE NEWS

MEETING OF MINDS
Last week in Lancaster lively minds from universities and polytechnics came together for the annual IUCC computer colloquium. Among the guests was that liveliest of software brains, Edsger Dijkstra, and the discussions on computer sciences and programming ranged far and wide. Peter Hewitt reports in Software File. Pages 6 and 7

SALARY SLUMP
During the past year DP salaries fell behind the national average increases but the boom in the use of computers continued, according to that reference bible for the computing industry, the Computer Users Year Book. Page 13

TIMES CHANGE
One of the most important impacts of computing technology has been on the printing and publishing industry. Rory Johnston reports on the operations of the New York Times, which has recently gone through a production revolution. Page 14

GET DISTRIBUTED
Just as the cliché'd advice used to be Go West Young Man, the latest computing trend is to Go Distributed.

This week's distributed processing supplement examines the realistic options open to users who are considering whether or not to go distributed. Page 17 to 19

ALSO . . .

JOBS IN THE NORTH: PAGES 22-63
APPOINTMENTS: PAGES 33-63

COMPUTER WEEKLY

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COMPUTERVIEW

Unions give an enlightened lead

TODAY we have naming of fears. Yesterday we had silence, but for today we are ringing the bells of doom. And we are offering no words of hope, no solutions.

That, in a metaphorical nutshell, has been the mass media approach to the impact of information technology, as typified by last week's TV Eye "probe" into the impact of micros on unemployment.

Until early this year, the subject of computers or micros was barely mentioned in the mass media, outside of the business news sections of the serious papers and the ocassional silly-gas-bill or big-brother-is-watching-you stories.

Then, earlier this year, Horizon on BBC TV produced a program, Now The Chips Are Down, which drew a link between micros, automation and increased unemployment. This program helped to trigger media interest in the subject, and hardly a day goes by now without a story about the threat of micros to employment.

TV Eye followed the usual pattern of such stories, stressing the nastiness of unemployment, and offering statistics on the possible impact of the micro on employment (computers and information technology are rarely mentioned, even when the micro is a trivial part of the system being discussed).

Rarely are any solutions offered or the way ahead shown to a future where new technology could co-exist with a harmonious social order, nor plans put forward which could begin to be implemented now to help heal some of the more dramatic social schisms that might be created, if fear dominates reason as we move into the "second industrial revolution."

At present, there is one section of British public life which is showing the kind of cool, long-range, objective thinking which should be brought to bear on the subject. And that section is the British trade union movement.

At the TUC congress in Brighton earlier this month (CW, September 7), a resolutions was passed which provides a useful blueprint for examining the whole range of social, economic, personal and political issues raised by information technology. These include a serious examination of whether we should be seriously preparing for a "leisure society" where the values of the protestant work ethic may be questioned; where it might not be a blow to a man's pride to be unemployed; where life-long education may become an intrinsic part of the social structure.

And at last week's BCS meeting, ASTMS boss Clive Jenkins in quiet, measured tones spelled out the shape of things to come and AUEW/Tass held a meeting last week to examine the issues in-depth (see pages 1 and 3).

Like TV Eye, Jenkins quoted figures of four to five million unemployed by 1990. But he followed it up with some part-optimistic scenarios of the future. While pessimistic about whether anything will be done to stop a major social unheaval when the reality of those unemployment figures sink home, he courageously suggested that trade union leaders and politicians should begin to rethink their fundamental strategy of believing that full employment is the ultimate goal and that it is through industrial growth that this goal will be achieved. If plans are properly laid, he said, life with high unemployment could be enriching and satisfying.

He stressed that the debate should not be about unemployment but about "quality of life," and about how society can be most peacefully moved into its new electronic era.

He provided no quick and easy solutions, but he called on the political parties to make the future quality of life a central issue in the next general election and for an informed and widespread debate to take place on the issues involved.

The TUC discussion on technology was given little prominence in the mass media, except for the highlighting of unemployment fears; and Clive Jenkins' speech rated barely a mention in a week where there were such more important subjects at hand like whether or not Jeremy Thorpe would attend the Liberal Party conference.

Sooner or later, however, the long term issues raised so lucidly by Jenkins and other trade unionists will have to be faced, despite Albert Booth's bland reassurances. And then the public will want to know why they had been so ill-informed and mis-informed.

Trophies for the individual men's and women's Computastars winners have been presented by Computer Weekly. The rose bowl goes to the woman competitor, and the silver and gilt cup (left) goes to the men's champion. The third cup has been presented by the Queen's Hotel, Crystal Palace, and will be won by the men's and women's teams from the same company which achieve the highest aggregate points throughout finals day.

Here's glory for you!

THERE'S just over a week to go to the Computastars championships at Crystal Palace, London, on Saturday, September 30. The programme starts at 11 am and 30 men's teams and 24 women's are entered to compete for the trophies and medals in this, the first contest of its kind for computer people.

The champion men's and women's team will be presented with the Ferguson-Francis trophies (see front page) and the individual champions will be awarded the Computer Weekly trophies (see above). The most succsssful pair of teams from one company will gain the Queen's Hotel Companies Cup. This is a special award for the men's and women's teams from one company initially entered as a joint entry, which score the highest aggregate points during finals day. If a company is fielding more than one men's or women's team, the pairing must be declared before the finals start.

All members of the first three men's and women's teams and the first three in the men's and women's individual classes will also be presented with commemorative medals given by Wright Air Conditioning, the computer room environment specialists.

Advanced bookings for the big day at Crystal Palace are now closed but tickets will still be available at the gates on the day, adults 60p each and children under 14, 30p each. Refreshment and bar facilities will be available.

For competitors who are knocked out of the main events early in the day, the fun will not be over. A tug-of-war contest has been organised, with refreshing prizes for the winners, and all teams are also invited to enter a slogan competition. The most apt will be displayed on the giant electronic scoreboard at Crystal Palace along with the company name and the winning entry will be selected by a Computer Weekly panel.

Computastars has been organised by Goldsmith Recruitment International, with the support of Computer Weekly.

Disco date

Why not finish off the day at the Palace by going to the Computastars disco? This is to be held in nearby Croydon with dancing to the well-known Sound Sounds recording group. Tickets cost £2.50 each and include food and it is essential to book to ensure a place. Tickets can be had from Gordon Cole, Computastars Disco, Goldsmith Recruitment International Ltd, 15 Buckingham Palace Road, London, SW1. Cheques should be made out to Computastars.

FOCUS

Keeping pace with progress

FOCUS can hardly be expected to let the passing of the computer's 30th birthday go by without comment. Even if most of us were probably too busy to notice.

Fortunately, others were not so preoccupied. Leading the celebrations was the National Computing Centre, which can always be relied on to observe such industry standards. The NCC documented the event by holding a celebratory luncheon in Manchester (CW, June 22) — claimed to be the birthplace of the computer. Presumably, micro chips were not featured on the menu.

It may well have come as a surprise to many DP professionals to realise that computing extends back so far. That generation gap certainly gets around.

Meanwhile, many of us get our regular does of nostalgia from the Computer Weekly Ten Years Ago feature. Anything before that date must be of BC (before computers) vintage.

The NCC luncheon celebrated the fact that a research team achieved a technical breakthrough by successfully running a stored-program computer. This pioneering spirit has not been abandoned across the computing generations, and DP installation breakthroughs are still widespread:

- Achieving implementation only three months behind schedule.
- Achieving in one shift, a workload which could well qualify for the sprint record in Computastars.
- Achieving, in the face of user opposition, a full-scale reappraisal of company management information projects.
- Achieving a communication interface success despite the reluctance of the Post Office to approve assorted modems.

Currently the role of computers is far from square. They are very much in the flexible mode, and DP teams have to be installation all-rounders. Their base is not a remote academy of learning but a vital part of an ever-expanding business organisation.

The British Computer Society, which is itself celebrating its 21st anniversary this year, and which is thought by many to be more representative of the academic world of computing, is said to be currently reappraising its role.

For the average DP manager, evidence of such change seems hard to discover. The 1979 BCS lecture, for example, is being given by Professor F. Laver, CBE, BSc, C.Eng, FIEE, FBCS on the subject, "The significance of computing". A more practical approach perhaps would have been to invite Fred Smith, DPM, to promote his views on the fast-changing world of data processing.

Just over a year ago, Computer Weekly organised a DP industry gathering at Hedsor Park. Much has happened since that event. Iann Barron, for instance, spoke of the need to create a Ministry of Technology. Barron has since moved on to help head up the NEB's Inmos.

Computer technology likewise has achieved rapid strides.

The government, already prominent in computing affairs, has now become even more involved.

Maybe, it is time for Computer Weekly to take the initiative once again. Keeping pace with progress is an all-embracing activity.

Ten years ago...

COMPUTER WEEKLY SEPTEMBER 12, 1968

THE merging of GEC/AEI-English Electric gave the resulting group a world lead in the number of automation and process control computers installed, 125 more than the US General Electric . . . To cope with the decimal changeover period in the UK, Philips brought out a version of the E3000 capable of handling both £sd and decimal currency . . . The guaranteed secrecy time sharing service developed by Hitachi and Tokyo University was given a trial run . . . Annual expenditure on computers by the Canadian business sector almost trebled in two years . . . The first production model of Computer Technology Ltd's Modular One was installed at International Data Highways . . . A US Government report recommended that no steps be taken to establish a national databank before adequate safeguards for personal privacy.

INTERRUPT

THIS story concerns a simulation program running on an IBM 7094 which took up to 15 minutes (at £3 a minute) to simulate a year's complex activities on a particular system.

It was run at night, and for most of the run time nothing happened except flashing lights on the console. Almost all the tape output appeared in the last few minutes of the run.

One night, an over-hasty operator thought the inactivity meant the program was looping, so he crashed it — and went about £40 worth of . . . To reassure the operator the program was still active, a routine was inserted to print something after every . . . of simulated time. That . . . the total run time (and cost) . . . it kept the ops out of mischief.

And the postscript . . . Operators must know . . . loop is not a loop . . . Otherwise the users . . .

Submitted by . . . Hanfield, Sussex.

During the past week, public discussion on the impact of information technology has reached new peaks. There were major speeches on the subject by Albert Booth (right), Clive Jenkins (left) and David Basnett; a "probe" by TV Eye on Thames Television; and the announcement of the Acard report (see page 1).

The main threads to the argument were succintly summarised by Jenkins and Booth and by discussions at a conference organised by AUEW/Tass.

'Full employment talk an absurdity'

A FIERCE attack on both major political parties over the issue of unemployment was made by Clive Jenkins, general secretary of the white-collar union ASTMS, when he spoke on The Collapse of Work to the London branch of the BCS.

Both the Labour and Tory parties were being equally dishonest in hiding from the public truth about the devastating effect on the demand for labour that the development of microprocessor technology would wreak during the next 10 years or so, accused Jenkins.

During the next general election, he continued, both parties would present themselves to the voters as being capable of reversing the upward trend of the unemployment figures although all the evidence clearly showed that neither would be able to do so.

"To talk about full employment is now an absurdity," said Jenkins. "It's far better to tell people the truth about the effects of new developments in technology so that we can create a society in which the resultant employment problems can be overcome."

If the social problems associated with the accelerating development of microprocessor technology continued to be ignored, the consequences would be truly frightening, he pointed out. Current unemployment throughout the EEC affected young people disproportionately, and of these young unemployed at least two-thirds were "innumerate and semi-literate" according to Jenkins.

Forecasts for the UK alone showed unemployment at around 5 million in 1990, of whom 2 million would never have had a job. Looking at the EEC as a whole, the picture was even more alarming.

"Since the EEC guarantees its citizens the right to seek employment in any of the member states, we could be creating an army of 20 million potential nomads in Europe," said Jenkins.

The ensuing discontent would inevitably be exploited by extremist parties of the right and left and so prove a threat to the entire democratic system.

Microprocessor technology would affect all industries, but among the first to be hit would be clerical workers. Jenkins estimated that by 1990 at least 30% of the UK's present 3 million clerical workers would have been dispensed with as the impact of word processing made itself felt.

Other areas which the new technology would drastically affect were printing, manufacturing and retailing, said Jenkins. In banking and insurance 40% of the current workforce would not be required by 1990. The motor industry would be particularly hard hit, and Jenkins claimed that Chrysler wanted to sell its UK operations in order to raise cash for development of a car using microprocessor technology and anti-collision radar.

Discussing possible solutions to the social problems to be caused by the widespread application of microprocessor technology, Jenkins emphasised that he would not offer any detailed proposals and that his prime objective at this stage was to encourage a national debate on the subject which could lead to definite action.

Among his suggestions, however, were an increase in the numbers employed in the service industries — the revitalisation of the National Health Service could be a prime priority — reallocation of tasks with less time spent at work by each individual, and an increase in facilities for adult education.

Above all the Protestant work ethic should be well and truly buried, said Jenkins, and there should be adequate income and purchasing power made available to those without jobs.

The failure to apply micros will lead to lost jobs—Booth

THE threat to employment from the applications of microprocessors is by no means certain but failure to apply the micro would inevitably lead to loss of jobs.

That was the way employment minister Albert Booth summarised the government's view of the impact of microprocessors to the AUEW/Tass conference last weekend on computer technology and employment.

To block the application of microprocessor technology would give the UK's industrial competitors advantages which would cause serious damage to the nation's economy said Booth.

Booth admitted that the acceleration of technological development could mean that there might now be considerably less time than there was previously to assess the social impact of technical advances, but he also believed that the pessimists were overestimating the speed with which microprocessors would be widely applied.

But he said the microprocessor could offer vast cost savings to many areas of industry, such as the motor industry, leading to greatly improved productivity. This in turn would increase employment through investment in new manufacturing areas made possible by microelectronics technology.

Much of the current pessimism over the social effects of new microelectronics technology was caused by the fact that the UK is only now beginning to recover from the effects of the world economic recession, according to Booth.

"We always look at new technical developments timidly during periods of recession, although we welcome them boldly during better economic time.

"Micros can, in fact, help the industrially advanced nations out of the recession, and create the kind of rapid economic growth that was seen in the Fifties and Sixties," claimed Booth.

Dealing with the changes in the patterns of employment which would be caused by the industrial implementation of microprocessors, Booth predicted that the service sector of the economy would become more labour intensive as the manufacturing sector became less so.

In particular the fields of health and education would profit from increased public spending in an economy revitalised by the new technology.

"The instruments must be developed to ensure that wealth is transferred to the service industries from manufacturing areas," declared Booth.

Public ownership call

THE government should take an increasingly "intimate involvement" in information technology including extending public ownership in the computers, telecommunications and semiconductor industries according to Ian Benson, AUEW/Tass spokesman on DP affairs.

Commenting on the employment minister's speech (above), Benson told Computer Weekly: "The crucial point is that he understands that government intervention is essential if we are to cope with the effects of microprocessor development. Traditional non-interventionary methods of dealing with technological change may not be able to cope as the pace of development and application accelerates."

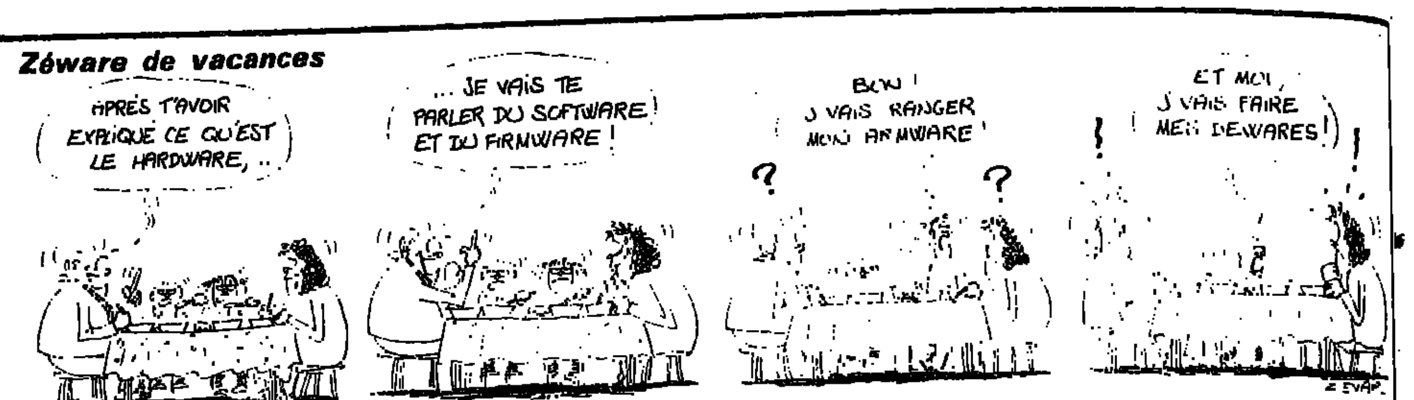
Benson had prepared a background document for the AUEW/Tass conference in which he called on the government to bring the tele-information technologies industries into public ownership.

He also warned that resistance to the creation of a harmonious "leisure society" to cope with increased unemployment should not be underestimated. Aspects of the likely shape of the leisure society, such as increased education and shorter working lives, were outlined by Clive Jenkins (above) but Benson pointed out that the Confederation of British Industry has already indicated its total opposition to the TUC's 35-hour week campaign. "A similar reaction can be expected to other essential claims for sabbatical periods, early retirement and increased real earnings," he added.

In the background document, Benson quoted from Sir Keith Joseph's interview in Computer Weekly (April 27) when the Conservative policy adviser said that the micro would pose no threat to employment because if the analysis that new technology led to increased unemployment were true.

"We would be left without any jobs after the industrial revolution which, instead, increased vastly the wealth of the country and the number of jobs."

DOWNTIME by Chad



Mother Goose automated

YOU may have read the story about the television censor device, which prevents children from watching TV programmes their parents think unsuitable (CW, August 3). Its New York inventor, Ray Dobson, was talking of bringing it to the UK, thinking there is a big market for it here.

I thought longingly that may be there were a *few* hopelessly old-fashioned parents left here who expected to be able to tell their children what programmes they may watch, and be obeyed.

However, a friend of mine had an idea about the machine. When no authorised programme is running, instead of just showing a blank screen it should display a message "Now parents, TALK to your children". (My friend wants a royalty for the idea, Mr Dobson.)

Talking of talking to children, I gather you can now buy audio cassettes of famous actors/actresses reading bedtime stories, to save you the trouble. So when the nippers come to you and say "Daddy/Mummy read us a story," you just press the player and a cassette into their hands.

Very handy, I hear people cry. After all, we have automated washing - up machines and automated cookers, why shouldn't we have automated parents? Besides, Michael Hordern and Judi Dench would be much better at reading stories than me.

Yes, dear parent, but you have one advantage: you (presumably) are a *human being*, and if we are going to have our children brought up by machines as well as born in test-tubes the human race might as well jack it in altogether.

One way of telling that you have a good grasp of a foreign language is when you find you can understand jokes in that language. The French computer newspaper "Zéro Un" has a cartoonist, "Zevar", whose strip on the back page is consistently ingenious. I reproduce here a sample — see if you can work it out. I confess it took me some time. I will print my translation elsewhere in Downtime — I'm *fairly* sure it is correct!

Technical fault

IF you read Paul Samet's article last week on Professionalism, you may have thought he was being surprisingly harsh towards British universities in saying that none of them dealt with technology until 1970. Let me reassure the professor's enraged colleagues by explaining it was a printer's gremlin at CW that converted an 8 into a 9; it was 1870 that Samet intended to say. We may be backward in Britain but not all that much!

Spaghetti unravelled

AN unfortunate truncation in last week's report on the Newcastle University seminar on the teaching of computer science makes it necessary to return to the subject of Dijkstra's Dining Philosophers.

Readers will recall that Professor Dijkstra introduced a party of philosophers who spent all their time either thinking or eating. The philosophers were presented with the problem that although a table was set with one place and one fork for each of them, the meal turned out to be an unusually difficult spaghetti which could only be eaten with the aid of two forks.

The problem, which according to Professor Dijkstra is extremely useful in thinking about distributed processing systems, is to find a rule which will prevent any of the philosophers from starving.

The poor men might well have starved by now, since that is where we left them. The argument presented by Professor Dijkstra demonstrated that each philosopher would eventually get fed provided only that no philosopher dined at the same time as his neighbour.

Kamikaze

IT was touching, was it not, that when the transatlantic balloonists ran out of ballast, they had to throw their navigational computer overboard to keep aloft and complete their historic journey. It's nice to feel that our machines are so dispensable.

It would have been much more poignant, of course, if the computer had decided on its own initiative to sacrifice itself for the sake of its human masters, and jettisoned itself automatically. After all, why shouldn't computers be as faithful and lovable as dogs?

Time future

FOLLOWING last week's story of an LCD watch from Texas Instruments with analogue display, rumour has it that TI will next introduce a watch with real hands instead of simulated ones.

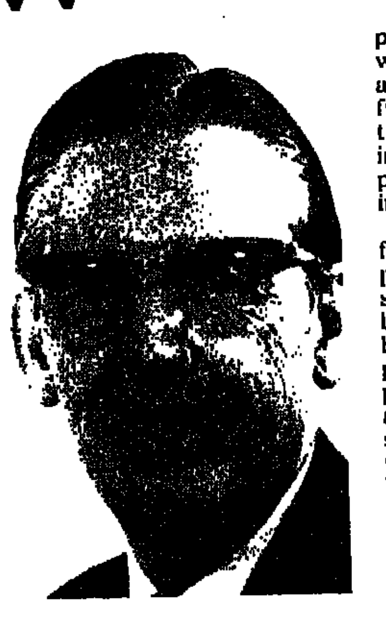
Then the next logical step would be an ecologically-sound power supply that uses a human being winding a knob rather than a throw-away battery that wastes valuable resources.

Instead of sending the parts to Taiwan or Singapore for assembly, TI could send them to Switzerland, where I understand there are a lot of unemployed factory workers recently made redundant by some development or other.

ZEVAR cartoon: Puns in foreign languages are always the trickiest jokes to decipher. "Armware" is "armoire", and "deware" is "devoir". Our hero's children would rather clean up their wardrobe, and do their homework, than listen to his exposition on the jargon of our mystical profession.

Professionalism: the IDPM view

Recently, Roger Griffiths proposed to the BCS professional a restructuring of the British Computer Society grading systems to take more account of the practical experience of DP professionals (CW, August 17). Continuing the discussion on computer professionalism, BCS president Professor Paul Samet defined the way in which the BCS has approached the question of professionalism (CW, September 7). EDWARD G. CLUFF, secretary general of the Institute of Data Processing Management describes the IDPM attitude.



I WAS so struck by the similarity between the words of a recent Computerview (CW, August 17) and my own views that I thought at first I was reading something I had written myself.

In a talk to the Cranfield School of Management, earlier this year, on the management of management services, I urged DPMs to "stop seeing themselves as specialists in DP, but as managers of an important corporate function — communications and information handling, because business data processing is taking an evolutionary step from DP to information processing."

The DP department can be a key factor in this evolution, but only if it broadens its horizons and becomes a vital part of the corporate transition to the electronic office of the very near future. I also agree with Computerview, in that there are many DPMs not ready to accept that this change is occurring.

As Alex d'Agapeyeff has said, "Ask a typical DPM how many microprocessors are operational in his company and the answer in most cases will be 'None', yet user departments are introducing them in many places without the knowledge of the DPM or involving his budget". A modern Trojan Horse indeed, yet it need not be. The DPM has a unique advantage in these developments, if he will only grasp the opportunity.

When speaking to a group of IBM users last year, I was faced with a persistent heckler who was adamant that his company was perfectly satisfied with the performance of his centralised computer department and that because he could demonstrate his profitability, there would be no challenge from minis, micros or distributed processing.

Yet any examination of the growth statistics of the industry in the US as recently reported in the US magazine Datamation suggests something close to a nil growth in new installations of mainframes. This assumes a certain level of replacement business and upgrading of existing installations. Of course, this doesn't mean no new installations in 1977, but something like the same number as in 1976 — a flattening out which we might not have expected a couple of years back.

Certainly we can argue about the absolute economics, but the trends cannot be ignored. In the same way that the mid-1950s saw a change from scientific computing as being the main purpose for computers, so now we can see a widening of the corporate structure so that DP as we know it becomes only a part of the total information processing scene.

The change has begun, and must accelerate. Those of us already in the industry cannot cling steadfastly to what we have and blindly hope that these trends will leave us untouched. Far better to make our own assessment of its impact on the fortunes of the company which employs us to aid its profitability and to recommend the introduction of the right equipment for the right purpose at the right time, not just in the area of data processing but for word and text processing, facsimile systems, data communication systems linked in with the switchboard, voice input and synthesis systems.

Because of the inevitability of the merging of text, graphics and data technologies, it becomes essential for us to blur these distinctions and to manage along application lines.

It seems to me that our ability to face these challenges relates very much to this open-ended argument, which continually rages in the pages of the journals as well as at various meetings up and down the country, about whether or not we are in a profession and if so, whether that *per se* makes us into professionals.

I have always considered this to be the most barren debate we could possibly spend time on. A couple of weeks ago I read an advertisement which stated, "Learning to think your way round problems, instead of blundering through them . . . in our book, is what being a Professional is all about". The advertisement was for a career in the Army, but I would expect few of us to quarrel with this definition, although no doubt many of the protaganists in this never-ending debate would want to add many other qualities.

The fact is that an organisation does not of itself become a professional body merely by the use of an examination entrance and a code of ethics. Furthermore, members of such a body do not themselves automatically become professionals merely by being accepted as members of such a body.

It is the professional competence of a number of people who have collected together in an organisation which will in the fullness of time, cause that body to be recognised as professional, in that it represents a group of people who behave and operate in a professional manner.

To return to the theme of information processing, a real professional will not limit his sights to the DP of today. He will be looking for any contribution he can make to his company's profitability, and thus competitiveness, in the marketplace and if this involves moving outside the boundaries of the computer installation to take on the broader role of organising management services, so be it.

To this extent, therefore, I understand and sympathise with the proposal by Roger Griffiths (CW, August 7) to change the criterion by which members of the British Computer Society are judged. His proposal that "proven ability to handle managerial responsibility" should be the qualification by which the BCS membership would acquire more significance and status is appealing, but has little hope of being accepted because it would at the stroke of a pen change the BCS into a DPMA.

One of the reasons which led the DPMA into the merger with IDP to form the now flourishing Institute of Data Processing Management was the recognition of this change from data processing as we have known it to the much wider concept of information processing. Information processing units are likely to be much smaller than the large centralised DP departments of today, and although they need managing both centrally to meet the needs of the corporate body and locally to operate efficiently, the need we in the IDPM see today is to help people to manage right down the line.

This means we have to take a much broader view of managing than Griffiths does, and broader than we in the DPMA did. We in the IDPM believe we have a responsibility to help to train people to manage quite small units, to train them also to manage themselves and their job, even when they actually have no responsibility for others.

If proposals before the council of the IDPM are accepted, the Institute will be providing a forum where users and others currently excluded from the ranks of professional organisations can meet with mutual benefit. This is a process which is good for IDPM members as well as being a contribution to their standing as professionals and will in the long term determine whether or not the Institute is accepted as a professional body.

CPI set to deliver two main products

THE peripherals factory set up at Stevenage by Computer Peripherals Inc to compensate for redundancies made there by ICL about two years ago is now employing 260 people.

Run by CPI's European subsidiary, CPI Data Peripherals Ltd, the plant is now starting to deliver its two main products — band printers and compact 6250 bpi tape drives — to the CPI shareholders, ICL, NCR and CDC, as well as to OEM customers outside CPI.

The 6,250 bpi tape drive is called the ATS III and employs the Group Code Recording technique first introduced by IBM. The main attraction of the ATS III is its compactness. The unit is only 24 inches high and can be mounted in a 19 inch rack. Its microprocessor based controller is 5¾ inches high, half the size of the controllers provided with competitive products, according to CPI.

The ATS III was designed at Stevenage and will be built there for all of CPI's customers in Europe. In addition it will initially be supplied to customers in the US, although the company said that production will start in the US when volume orders are picked up there.

ICL is to offer the ATS III as the main tape drive for use with its 2900 series mainframes up to the 2970 level while 2980 users will be supplied with the TTG 200, a floor standing 6,250 bpi unit built by CPI in the US. ICL sells the TTG 200 as the MT1250.

ICL's own tape drive manufacturing operation at Winsford in Cheshire is to be gradually run down.

Sales of the ATS III to customers other than the CPI shareholders will be handled by the OEM peripherals marketing side of Control Data, the majority shareholder in CPI.

CDC is increasing its holding in CPI from 42% to 60% (CW, June 1) while ICL and NCR will have 20% each of the company.

The other main product at Stevenage, the 9380 band printer, is being built there in 360 and 720 lpm versions for ICL, NCR and other European customers, while faster units are still being imported from the US where the 9380 was originally developed by CPI about three years ago.

Firms other than the CPI shareholders now being supplied with 9380 units by the Stevenage plant include Systime and Norsk Data. CPI plans to ship about 600 9380s from Stevenage this year.

PREPARING to expand its offerings to UK users of Sigma mainframes from the former Xerox Data Systems, Telefile Computer Products has commissioned a 6,000 square foot technical resources centre in Slough where add-on disc and tape drives and main memory units for Sigma computers will be tested prior to customer delivery (see picture).

Next year, Telefile will also introduce its plug-compatible emulation of the Sigma 9 processor, built using AMD 2901 bit-slice micros.

The centre is to be run by Ken Lavery, who joined Telefile from Rank Xerox Data Systems along with several engineers. The picture shows an engineer at the centre at work on a disc controller.

Banks' bureau battle settled

A SETTLEMENT has been reached out of court between Adapso, the US association of bureaux, and Citibank and Chase Manhattan Bank, which it was suing to prevent them from selling bureau services (CW, July 6). The two banks have agreed to operate their computer service organisations as separate companies with different names.

Jerry Dryer, Adapso's executive vice-president, indicated he was well satisfied with these arrangements.

Hitachi unveils its 'super computer'

THE long-awaited Hitachi "super computer," unofficially known as the M-210, has now been announced in Japan as the M-200H. Like Fujitsu's M-200, the Hitachi machine is available with from one to four processors, each capable of addressing up to 16 Megabytes of main memory, and each having a 64K byte cache memory.

Itel is expected to add a version of the M-200H to its catalogue as the AS/7 (CW, June 29), but it will be some time before this happens, since first deliveries in Japan are scheduled for the latter half of next year.

The specifications of the M-200H indicate that it is considerably more powerful than Fujitsu's M-200, which itself leaves the IBM 3033 way behind. It is the first time that Hitachi has offered an M-series larger than the biggest Fujitsu offering: Hitachi's previous biggest machine was the M-180, equivalent to a 3032.

Like Fujitsu with OSIV/F4, Hitachi is working on its own version of IBM's MVS large-scale operating system, which will have additional features to support a unique scientific option offered with the M-200H.

This is an integrated array processor which is claimed to process complex scientific calculations four times faster than would be possible with the conventional IBM 370 architecture used in the M-200H.

The M-200H is rated at between 7.5 and 9 million instructions per second, compared with 8 to 8.5 for the M-200 and 4 to 4.5 for the 3033.

Like the 3033 and M-200, the M-200H supports up to 16 channels per CPU, with an aggregate transfer rate of 26 Megabytes per second, the same as IBM's 3033, but faster than the 20 Megabytes per second of the M-200.

Glasgow finds VME/B less painful than other universities did

AFTER some months of trials and development work on the VME/B operating system, Glasgow University's new ICL 2976 was officially opened last week at an inaugural ceremony by computer pioneer Professor Tom Kilburn of Manchester.

Installation of VME/B has been considerably less painful than at other universities that have acquired large 2900s, and the academic staff at Glasgow say they are happy with the way things have gone.

All the Computer Board's purchase contracts have performance specifications written into them, and there have been serious difficulties getting large 2900s using VME/B to handle the required workload of batch and terminal work because the operating system uses up so many resources. ICL has been forced to add extra hardware free of charge to make up the performance in some cases.

At Glasgow, however, the shortfall under the trials was quite small and was rectified by the addition of an extra disc and an interleaving unit.

The system, which was delivered last December and handed over in March, has three Megabytes of main store, 1,200 Megabytes of exchangeable disc and 10 Megabytes of fixed disc for system use. Controlling the terminals are a 7905 communications processor and a CTL Modular One minicomputer. At present the system can handle about 20 terminals at one time, while running a batch load roughly equivalent to that on an IBM 370/155.

The release of VME/B in use now is 5X23, but by mid-October it is hoped to put up 5X27, giving a capability by the end of the year of 40 terminals at once.

Development work on the systems software has been a joint effort between Glasgow and ICL staff, with a good many enhancements being added.

For instance, one important facility is a "policing system" that stops users from using up too much file storage space, on which there is a premium.

The system cost £1.7 million and will be used mainly for research in a wide range of arts and sciences, but with teaching and university administration also using a good deal of its time.

According to Dr Ken Browning, director of the Computer Service, the 2976's performance is considerably better than that of the 2980 at the universities' regional centre at Bush Estate near Edinburgh, but that machine has half a Megabyte less memory.

GILB'S MYTHOLOGY

Modularisation: unsung database technique

PROFESSIONAL conferences and publications are jammed with database technology. It sells well. In spite of this there are a number of fundamental techniques for database organisation which are virtually absent from the discussion.

This is surprising since they have been practiced in many installations for many years, and they have impressive sets of attributes which can compete, in many cases, with the best claims of the database packages.

The only reason I can find for the supression of discussion is that these techniques could not be "sold" as an expensive package to you.

The technique which I want to expose in this column is called (by me, because I can't find it in the literature under any name) database modularisation. It is a direct competitor with the concepts of IMS, Total, System 2000, Codasyl-based packages, and all the rest of them.

It combines the fundamental database concept of centralised control and updating, with the currently popular concept of distribution. It will work on any computer which can use secondary files, and there is no rental charge.

Database modularisation is, as its name implies, simply an application of the time honoured modularisation principle but, applied this time to file data as opposed to program logic.

In a nutshell the principle is this. The centralised database resides somewhere (likely as not on a set of magnetic tapes, but possibly on direct access media) and this is called the master database.

Most databases are extracted sub-files (but they may be 100% copies) of the master databases may reside permanently or temporarily in any varied set of computers.

Pseudo updates may be performed locally, and kept online in a change file for reference until they are collected into a periodic update procedure against the master. Protection of the master is conventional, by the keeping of previous generations and changes.

Working files are protected mainly by getting a new extraction from the master, but, if they are small working sets, then local duplication may be more relevant.

Notice in this highly modularised environment the following principles apply. The master is not online to the working environment and not subject to destruction in complex and hectic environments.

In particular master data which is not relevant to the working environment cannot be destroyed, or accessed against security requirements in any way. It is not physically available.

Physical separation is much better than logical separation currently practiced in most database management software. The performance optimisation problem is simplified.

The master can usually be optimised for fast reading sequentially with skips to reels or record blocks possible for even greater effect, when generating some files.

The tuning of any working database cannot affect the master or any other working database. Thus any master or working database can be sub-optimised for local performance.

The total work capacity of the set of all database thus tuned, will often clearly exceed the performance of a single central master which is also physically the working set of data.

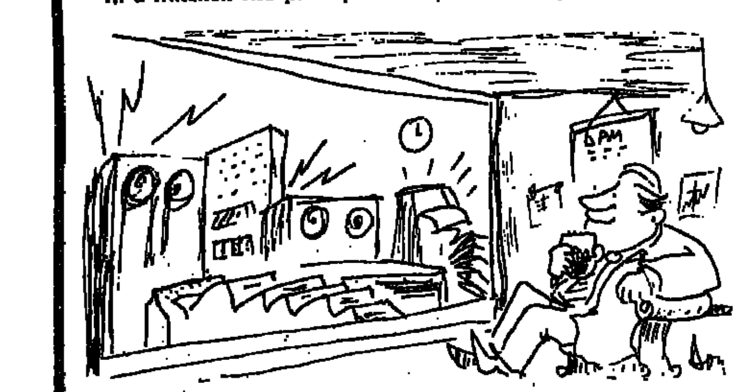
I have noted, mainly as a result of applying modularisation to practical designs for years, the following areas where superior design attributes can be expected compared to "conventional" database design.

Portability, back-up, recovery performance optimisation, overhead costs, file compaction, program portability, reliability, security, project development time control. You can modularise sub-projects without having the whole database and overheads working.

There are, of course, a number of attributes which in some situations will not effectively compete with a more physically centralised approach. These are mainly the case when a very high percentage of the Master records would be substantially updated in a very short time period.

My "score card" is that I make use of the method in at least half of the database design I get involved. The other half are often artifically constsrained by prejudice for the one big database approach, and I don't always find it fruitful to take on IBM's marketing effort at each turning.

I'm not saying that modularisation is always best. But it is effective enough to be seriously considered in most applications.



". . . the master is not online to the working environment and not subject to destruction in complex and hectic environments . . ."

SOFTWARE FILE-1

'Open' moves to strengthen Basic

THE Open University is working on the definition of a greatly enhanced version of Basic, which it hopes to use on future computing studies courses.

Key areas in which the language is to be strengthened include facilities control structure, data structure, string handling and file processing.

The new language, work on which has been underway for about six months, is likely to be closely related to SBasic, an experimental enhancement of Basic developed at Dartmouth College in the US. If adopted, it will be implemented initially for the OU's three DECsystem 20 machines.

'We need, in short, a language in which every line is as independent as possible. To put it another way, we regard this particular characteristic of Basic as indispensible'

Details of the rationale and provisional specification for the language are contained in a paper presented to the IUCC Computing Colloqium last week by Dr Peter Thomas.

The paper addresses at length the special requirements for an OU programming language, given the unique constraints under which it has to be used.

With students working almost exclusively in isolation at remote terminals, smooth and productive terminal sessions are essential, it notes. In support of this aim, one general requirement is for meaningful error messages, enabling the unassisted user to correct mistakes quickly and without fuss.

other line. To put it another way, we regard this particular characteristic of Basic as indispensable", the paper notes.

The language however had also to allow and encourage the writing of modular and structured programs, and programs which could manipulate data in a natural way.

"Our examination of existing languages showed that although there were a number which satisfied many of our criteria, each and every one had disadvantages. The main crux lay in our conviction that some of the features of Basic were too valuable to be discarded.

"We were thus committed to a search for a language which retained these features, but which was modern and allowed structured programming."

The language provisionally defined offers a variety of control structures familiar from other languages. These include IF . . THEN . . ELSE, and the CASE construction, the latter providing a useful "otherwise" category known as a DEFAULT.

The other major control structure is LOOP. Terminated by an ENDLOOP on a subsequent line, the construction equates to a DO and can be

Arising from this, specific requirements for the language include line-by-line syntax checking and the trapping of as many errors as possible as soon as a line has been typed.

"We need in short, a language in which every line is as independent as possible of every qualified by FOR, WHILE and UNTIL values.

The language defines a program as consisting of a main program and a series of subprograms, viewed as separate modules. Subprograms, which can be either functions or callable subroutines, only receive data passed via parameter lists.

A notable difference from Basic is the greatly reduced role played by line numbers. With their control function replaced by program constructs, line numbers are used only for the identification of program statements, for example in run-time error messages.

Other significant features of the language include a comprehensive range of file handling and string handling functions.

The Open University, which has been working in close conjunction with Dartmouth College, aims to complete its specification by the end of October. It plans subsequently to embark on a DECsystem 20 implementation, possibly by recourse to public tender.

The new language appears to be targeted primarily at the needs of a new introductory course in computing to be introduced by the OU in 1981.

'A notable difference from Basic is the greatly reduced role played by line numbers. With their control function replaced by program constructs, line numbers are used only for the identification of program statements, for example, in run-time error messages.'

This course, which will replace the two existing introductory courses, is expected to place a greater emphasis on commercial data processing.

The existing courses — algorithmic approach to computing, and Computing and Computers — have been running since 1973 and show a distinct bias towards scientific programming and computer science, according to the paper.

PROGRAMMER NOTES

Detecting syntax errors as text is processed

A METHOD of implementing an intelligent editor, capable of detecting syntax errors in the text being processed, was described at the IUCC Colloqium last week by a researcher from Cambridge.

Aimed in part at speeding up the software development cycle, such an editor can ensure that a program will compile without error at the first attempt.

The Cambridge approach, described by N.G.P. Day of the Computer Laboratory, is to combine the editor with a parser, the latter running as a concurrent background task while the user is editing.

In operation, the parsing program scans the same section of source code that appears in the editing "window". When it finds a syntax error, it displays an appropriate error message on the screen and positions a special cursor at the relevant point in the text.

The system can thus in effect lead the user through the text, drawing his attention to each error in turn. Should an alteration be made at a point already passed by the parser, the parsing scan is restarted again from the beginning of the current window.

Consisting of about 50 lines, the window represents that section of the text within current scope of the editor. The user, who can scroll the text up or down through the window, uses cursor control keys to select the current character.

Subsequently, editing actions possible are restricted, in immediate mode, to the deletion of the current character, or the insertion of characters after the current character.

The implementation of the system is based on Augmented Transition Networks, a development of Push-Down Automata. A key feature of this approach is that the rules governing the structure of the material to be edited can be defined in tables.

Thus, in operation, the user simply selects a table specifying the appropriate ATN, and then uses the editor in the normal way.

The technique, which is equally applicable to non-linear structures, has so far been used to develop editor-parsers for Pascal and BCPL on a PDP-11/45. Parsers for Intel 8080 assembler and non-linear structures are currently being implemented.

Puzzler

HENRY Dudeney (1847 to 19..) once worked out that there are 11 different "mixed fractions" which total 100 using the digits 1 to 9 once only. Ten of them, ranging from:

$81\frac{5643}{297}$ to 96 ...

have a two figure whole number.

The other fraction has a one figure whole number. Can you find it before turning to ... for the solution.

SOFTWARE FILE-2

EDITED BY PETER HEWITT

Two key features spearhead 2200

POWERFUL software development facilities and a carefully-considered software environment are key features of Wang's 2200 VS system (CW, June 22) which was launched in the UK this week.

Including compilers for Cobol, Basic, and RPG II in addition to a macro-assembler, the system is strongly orientated to online applications and to interactive program development.

Each language generates re-entrant application code, so that a single copy of an application program can be shared by several user terminals. The language implementations have also been enhanced with features for handling interactive work-stations, such as Read and Display commands.

With the exception of RPG II, all the languages provide facilities for communicating with programs written in other languages and all file formats are language independent.

In support of program development, the system provides an interactive text editor and debugging processor. Permitting inspection of program code, and inspection and modification of data by memory address, the latter also provides a symbolic debugging feature which displays sections of source code in a program "window".

Much of the power of the system comes from an unusually sophisticated range of utilities. One of these, Ez-format — pronounced with an American "Z" — can be used to produce a source program automatically in a specified language.

Reminiscent of the Escort processor developed by Univac for the BC/7, this generator prompts the user at each stage using a hierarchy of menus. Even a non-programmer could in this way create simple terminal data-entry programs.

Another utility, Control and Report, provides facilities for updating, examining, and listing file contents based on a dictionary of data item names.

A major feature of the system throughout is that the user can be guided through any operation by a series of prompting screens. This mechanism operates by default, only coming into operation if the system has been given insufficient data.

Although not offering a DBMS, the system goes some way to meeting such application needs with a powerful indexed-sequential file mechanism, which is capable of handling multiple indexes. This enables application data to be accessed via different paths, according to the context.

A customer file, for example, could in this way be keyed both on customer number and customer name. The organisation method supports up to 16 alternate keys in addition to the primary key.

Wang's software in addition supports simple sequential files, which, unusually, can also be accessed in random and skip-sequential modes.

One attractive feature of the file management system is that file placing is handled automatically, as is file size. When a file becomes full, it is extended dynamically by the system.

Files are also subject to automatic record compaction, which is designed to economise on disc space. Applicable both to program source and data files, compaction is achieved by replacing repeated characters with a single copy of the character and a repetition count.

The elimination of multiple repeated blanks alone is said by Wang to achieve a 25-30% reduction in the size of files such as name and address.

CGS aims for $100m

The international software and services group, CAP-Gemini-Sogeti, is on target for a 1978 turnover of over $100 million, according to the group chairman, Serge Kampf.

For 1977, the group turnover was about $90 million including, for the first time, revenue from the Bossard management consultancy and communications company, which joined CAP-Gemini-Sogeti in 1976. Pre-tax profits for 1977 were $4.2 million, over 4.6% of the turnover, about the same percentage return on investment as in the previous year.

Comparison with the 1976 figures is difficult, as new consolidated accounting procedures were started in 1977, as well as the introduction of Bossard.

Without Bossard, Kampf said that the 1977 turnover was $62 million, compared to $53 million in 1976, a rise of about 17%.

The size of this group, compared to the relatively small size of UK firms such as Logica, which is expected to have a turnover of £10 million this year, is one reason why the NEB is trying to create a large UK group via its Insac subsidiary.

In addition to the Bossard group, which implemented the planning system for the design and construction of the Georges Pompidou Centre for Arts and Culture in Paris, the CAP-Gemini-Sogeti group includes Gemini in the UK, Pandata in Holland and companies in the US, Belgium, West Germany, Sweden and Switzerland.

...and the other '520'

SOFTWARE companies live and prosper by making optimum use of their one major resource — their experts' time — yet, as CAP-Gemini-Sogeti has pointed out, on average about a quarter of their staff are engaged in non-invoicable activities at any one moment.

In the group's 1977 annual report, there is an interesting insight into what happens to this time.

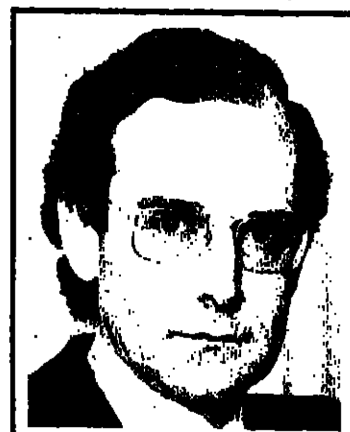
"For 1977, the average invoicing rate was about 74%," the report pointed out. "This percentage, which might seem 'normal', means that, at any given moment 520 out of a total of 2,000 employees are engaged in non-invoiced activities."

Of those, 170 were on paid holiday, 60 were away for reasons such as sickness and union activities and 140 were undergoing training, working on contracts that are not being invoiced by the company — perhaps because of an overrun on a fixed price contract — or simply waiting to be assigned to a project.

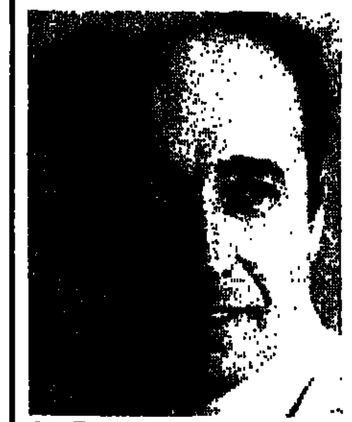
The other 150 were involved in research and development activities, including the development and drafting of technical proposals.

"In view of the increasing complexity of requests for quotation, proposals submitted to prospective customers often constitute in-depth studies of the problem and its proposed solution and requires extensive documentary research and exchange of information" the report said.

The report concluded that, although the 150 people involved in research and development are not involved directly in revenue producing activities, the investment in this activity is an "economically efficient one" because it enhances the group's technological capability as well as of being beneficial great benefit to the individuals.



John Pearce



Len Taylor

Insac 'happy to have Logica as a member'

IT was made clear this week that Logica is very likely to join the government's software concern, Insac, when its deal involving the National Enterprise Board and its previous backer, Planning Research Corporation, has been completed (CW, July 6).

Although there have been no formal negotiations, John Pearce, chairman of Insac, said that Logica had expressed an interest in joining and that Insac would be happy to have the company as a member.

Pearce noted that members of Insac are not bound by a formal or legal agreement, the only prerequisite for membership being a significant NEB stake in the company.

Insac was then free to invite the company to join. If it accepted, its transition to membership was marked by the chief executive joining the board of Insac.

A major NEB holding in a firm in no way led automatically to Insac membership, he noted, citing the examples of Case, in which the NEB has a 28% stake (CW, April 13), and Ferranti.

Len Taylor, managing director of Logica, said that : "We hope and expect that there will be areas in which we can co-operate. Our negotiations so far, however, have been with the NEB, and not with Insac."

"In the past, we have had preliminary discussions with a number of organisations which expressed an interest in taking us over, but none of these reached a serious stage. Our deal with the NEB strikes us, however, as sensible, and involvement in Insac would offer a number of advantages, both of them and to us."

"There has been a very favourable reaction to our announcement of the reorganisation and, although we had a very good relationship with PRC, we are pleased to be free of our 'mid-Atlantic' image."

Taylor went on to say that PRC's sale of its holding, which followed an approach by Logica, will be accompanied by major changes in the structure of the holding company, Logica Group, which are yet to be settled.

Thus although Logica staff holdings of the "earning" shares are to be more than doubled, from 25% to 51%, prospective shareholders are unlikely to be called upon to produce large cash sums.

Logica has up till now paid no dividend on these shares but this is unlikely to have worried PRC which has undoubtedly realised a substantial gain since its original investment in 1969.

The sale of its 75% holding of this stock for around £4.2 million gives a notional value of £5.6 million to the complete equity.

Host emulation of target micro instruction set

A MICROPROCESSOR development system adopting the unusual approach of software simulation has been produced by a systems and software company based in Wokinham, Berks. The company, Albetros (Engineers) Ltd, has so far produced simulators for the Intersil IM6100 and Plessey Miproc.

The software, which is written in Fortran, enables the host machine to emulate the instruction set of the target microprocessor. It is so far supported on Digital Equipment PDP-11 equipment and Data General's Micro Nova.

The company is also developing software to emulate the Texas TMS 9900, Motorola M6800, and Intel 8080.

Peter Hills, a director of the firm, pointed out that the approach allows microprocessor application programs to be developed and tested in a fully-supported environment. In addition to the facilities of the host machine, the package provides a variety of features for the user to trace, dump, and debug routines.

The package also provides a microprocessor development which is capable of serving many users simultaneously, he noted. A typical PDP-11 system running under RSTS could easily support 10 concurrent users, he said.

Software emulators are notoriously slow and Albetros' software is no exception. Hills observed that the packages exhibited a reduction in execution time of between 10 to 1 and 40 to 1.

For this reason, it is not generally practicable to assemble programs on the host, using the native microprocessor assembler. Instead, cross-compilers are used to generate object code suitable for the target.

In addition to supplying the development system as a software package, Albetros will supply a complete microprocessor development system based on a Data General Micro Nova. Including standard Data General compilers for Fortran and Basic, dual diskettes, a VDU, and 32K of memory, the complete system sells for around £9,000.

Puzzler

WHAT is the next symbol in this left-to-right sequence? See page 61 for solution.

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PEOPLE

Miss World presents Doris Brandon with her prize

Suddenly It's Simple

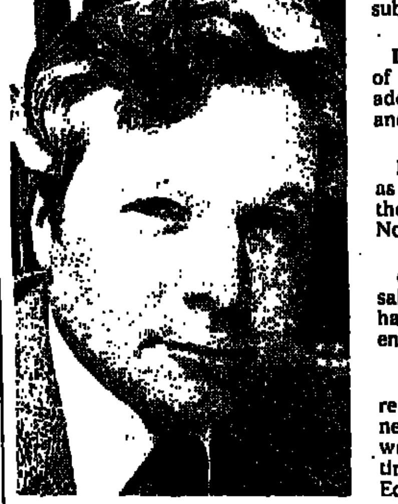
THE slogan "Suddenly It's Simple" won cashier Doris Brandon, of Grand Metropolitan Systems, a cheque for £100 in a recent company competition (CW, May 25), and will be used to promote the division's services. Doris' prize was presented to her by the reigning Miss World, Mary Stavin.

The computer consultancy Grand Metropolitan Systems is a division of the Grand Metropolitan Group, as is Miss World Ltd. During her visit, Mary was shown the computer installation, which has one of the few Itel AS/5s installed in the UK.

Peter Lynch, late of Honeywell where he was minicomputer support manager, has become senior territory manager for the financial branch — central accounts with Redifon Computers.

Fred Eldridge of Software Sciences has been promoted to the new post of technical sales manager. He will retain the responsibility for liaison with European agencies and software houses which he held as territory manager.

John Singleton, previously computer services manager of Link House Publications, has been appointed to the board.



MANAGING director of Hourds Computing, Stan Strudwick, was director and general manager of the company from its foundation four years ago until his recent appointment. He has also joined the main board of R. W. Hourd and Son, the parent company.

John Heath, previously computer manager of stockbrokers James Capel and Co, has joined Gordon and Gotch Computer Group as a financial systems executive. **Michael duBrec**, formerly of Apeco where he was a sales executive, has joined the Group as a business sales executive.

Michael Leach, previously engineering manager for Accuspede with Emerson Electric Industrial Controls, has been appointed engineering manager of uninterruptible power supplies, which includes responsibility for engineering aspects of Accupower designs. **Kenneth Hackeborn**, who previously worked in the assembly and wiring shop, has become manager of the sub-assembly factory.

Dave Holland, managing director of Digi-Data, has been given the additional responsibility for sales and distribution throughout Europe.

Philippa Parton has joined BASF as a sales executive, responsible for the sale of EDP media in Central and North London and Middlesex.

Gerry Bowman, most recently a sales engineer with G and E Bradley, has joined Avel-Lindberg as sales engineer UPS systems.

Chris Warren, previously a sales representative with Olympia Business Machines, has joined the software products sales team of Westinghouse Management Systems in Edgware, Middlesex.

Peter Huggins, previously managing director of Richmond Business Electronics, has joined GEC Semiconductors as manager of the sales and distribution department.

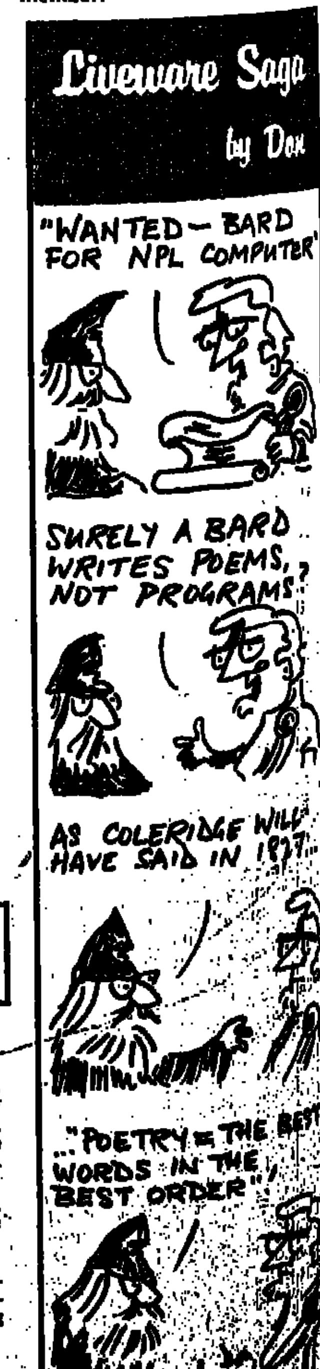
John Knight has left Itel UK where he was Northern sales manager, to become sales manager in the UK for Atlantic Leasing.

David Harris will join Plessey on July 17 as director of administration and company secretary. His present position is as senior solicitor with ICI's legal department.

Parton

O'Toole

Ken O'Toole becomes marketing director of DCC International. Until recently he was regional director of CMC, of which he was a founder member.



Officers elected

AT the Annual General Meeting of the Article Number Association UK, Donald Harris, director of Tesco's, was elected chairman, succeeding Stanley Maughan, who has retired.

The vice-chairman and honorary treasurer, John Prout of Nestlé and David Barrett of Fine Fare, were re-elected.

The Continuous Business Forms Manufacturers Section of the British Printing Industries Federation, at its AGM, re-elected as chairman Cliff Brown, managing director of Roffs Print of Falmouth, and elected as vice-chairman Allen King, managing director of Inchbrook Printers of Wotton-under-Edge.

The chairman expressed the Section's regret at the death of previous vice-chairman Jim Richardson of John Dickinson Stationery.

BETA's golf tournament

AT the Business Equipment Trade Association's fifth annual golf tournament, held at the Royal Mid-Surrey course in Richmond, the President's Trophy was won by the team from the Peter Williams Group. ... The BETA Cup went to the Office Machines and Equipment Federation team, a member of which, Richard Broderick, also won the Rank Xerox Trophy for the best scratch score over 36 holes. In all, there were 99 entrants, and 11 trophies were awarded.

Giltspur at NEC

THE computer and machinery removing department of Giltspur Bullens Transport Services now controls the company's handling operations at the National Exhibition Centre. Questions relating to handling should be addressed to Bob Thompson, the manager of the department, at Hinckley.

JULY 18-20
Artificial intelligence, conference. AISB/GI. Hamburg. Details Derek Sleeman, Leeds 31751, ext 7264.

JULY 19-20
Local authorities group meeting. IBM Computer Users' Association. INLOGOV. Birmingham University.

JULY 20
Southern Group meeting. ICL Data Entry Users' Group. HSV Ltd, Basingstoke. 11.00.

AUGUST 6-8
Computers, communications and technology transfer, Jerusalem conference on Information Technology. Information Processing Association of Israel/IEEE. Jerusalem.

AUGUST 21-24
Operational data security workshop. Operational Data Security Corp. City University, London EC1. Register August 18: 01-253 4399, ext 347.

AUGUST 21-25
Cybernetics and systems fourth international congress. World Organisation of General Systems and Cybernetics. Amsterdam. Details: Dr J. Rose, College of Technology, Blackburn, tel: 0254 54321.

AUGUST 22-25
Conference on parallel processing. IEEE Computer Society/Wayne State University. Bellaire, Michigan, USA.

AUGUST 23-25
Siggraph 78, fifth conference on computer graphics and interactive techniques. Association for Computing Machinery, Atlanta, Georgia, USA.

AUGUST 28-SEPTEMBER 1
Eighth Australian Computer Conference. Australian Computer Society. Canberra.

NEB's 64K bit plans slammed

"INCONSISTENT, hastily conceived, and over ambitious." With these words London stockbrokers Wood, MacKenzie and Co have roundly condemned the move by the National Enterprise Board to set up a new company to make 64K bit semiconductor memory chips.

The condemnation comes in the company's first quarterly Electrical and Electronics Newsletter. Though it admits that the details are still hazy, "and certainly puzzling," the report is a fair dissection on the few facts that are known.

The NEB plans suggest, it says, that its protege company can catch up with the Japanese developments in VLSI technology on £50 million, rather than the £300 million already committed by the Japanese. In answer to this it quotes the statement by Jack Akerman, managing director of Philips subsidiary, Mullard, that it would take £500 million, not £50 million to get into the business.

As has been pointed out before, both the Japanese and Philips have investment programmes that go well beyond the production of one device type, though the NEB will have to invest much more to expand the product range.

The report is most scathing about the employment target for the new company of 4,000 jobs within three years. This, it says, is particularly hard to accept, and reveals the preoccupation of government with job creation through manufacturing rather than the service industries.

On the basis of manning levels currently pertaining in the US semiconductor industry, 4,000 jobs would imply a minimum turnover by the new venture of \$100m to \$120m by the early 1980's. Such a sales level would require a growth rate that even Intel failed to attain with the advantage of a new and largely proprietary technology.

If these figures were attained, the report suggests, the NEB company would indeed be an influential giant in the industry. Intel's 1977 MOS sales were about \$270 and only Texas Instruments and National Semiconductor topped \$100m in this market sector.

Training funds must come from government, says Penney

FUNDS for training new computer staff, thereby relieving the serious manpower shortage in the industry, can only come from central government, according to George Penney, the National Computing Centre's careers manager.

Writing in the NCC's journal Interface, Penney warns that one of the most successful centrally-funded computer training schemes, Threshold, is in danger of closing next May because it does not fit into the government's new training programme (CW, July 6).

Penney points out many factors preventing people from getting adequate training on the job. He says that small new installations, that are springing up continually, are unable to take on many trainees, if any, while these firms can attract experienced staff away from established organisations, often by offering better opportunities for promotion.

The industry training levies that work quite well in other, more homogenous industries, could not really work in DP because the majority of computer installations are not in the data processing business, but in engineering, catering, distribution, and so forth.

Employers in these fields were much more inclined to invest their money in training new engineers, cooks, etc, than computer staff. A sole exception was the Civil Service, which did a great deal of DP training, and lost about 25% of these trained staff a year to private industry.

According to Penney, the universities and polytechnics are producing about 1,200 computer staff a year, and the majority go to work for mainframe manufacturers and software houses.

It would be foolish, Penney says, for other employers to adopt the "graduate-only" entry standard. The other main source of staff, TOPS, is for mature students only and will not take school-leavers.

Penney concludes that the expansion of the industry is being held up not by lack of funds or teaching resources, but a failure of direction in placing the funds where they are needed. Hopefully, he adds, it will be possible to find another umbrella under which to operate Threshold.

SPOTLIGHT ON FINANCE FOR INDUSTRY

ICFC invests £50m in small firms

ALTHOUGH the National Enterprise Board and its Insac software venture have basked in the limelight of publicity for most of the past year, the Industrial and Commercial Finance Corp also had a record year, investing £50 million in 518 small and medium-scale companies.

The figures for the year to March 1978 indicate a big upsurge in the small private sector, and are almost double the £26 million advanced in 1976-77.

The ICFC, 85% owned by the English and Scottish clearing banks and 15% by the Bank of England, covers the entire industrial and services spectrum. It is currently taking a keen interest in the development of businesses built around microprocessors, and helped two companies get off the ground in this field last year. One microcomputer company with which it is currently involved is operating from an attic.

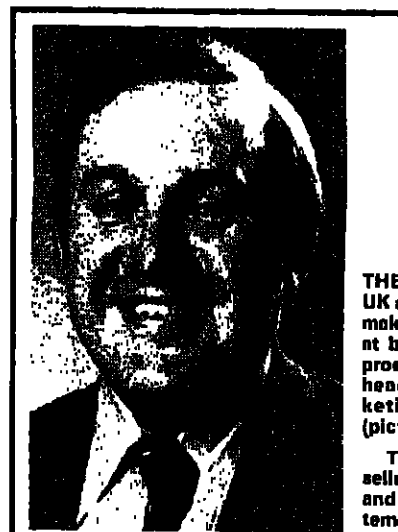
Advances of as little as £5,000 can be made. Last year over 300 customers received backing of between £5,000 and £50,000.

The most important service offered by ICFC is longer term loans than the banks will normall consider. The rate of interest charged by the corporation is presently between 13% and 14.5%, fixed for the term of the loan. ICFC will also put up share capital, and does not normally require a place on the board.

ICFC's experience underlines the need for caution. Half of the company start-ups in which it is involved fail, and 0.6% of the money it advances turns into bad debts. It says that offers are made in 75% of cases where a serious approach is made.

In general, the feasibility, viability and prospects for a company are checked out by one of ICFC's 17 industrial specialists, each of whom is well versed in several market sectors.

ICFC does not go in for hard selling of its services, but it does try to make contact with new companies which might not otherwise be aware of its existence, usually by letter.



Claydon

Aiming at top 1,000 companies

THE top 1,000 companies in the UK and government departments, make up the customer base aimed at by Olivetti's data processing products division which is now headed by former Olivetti marketing manager, Phil Claydon (pictured left).

The data processing division sells Olivetti's range of terminals and distributed processing systems as well as its office computer products.

CTL plans 20% growth

WITH preliminary turnover figures for the year to April 1978 of over £5 million, and a 20% growth planned for the current year, independent UK minimaker Computer Technology is planning to expand further by acquisistions in the software area. The full figures for the company are to be published in September, but CTL repaid £350,000 in loans last year and has boosted its business prospects with the addition of the low-cost 8020 processor which will take it into the OEM systems builders market

The Industrial and Commercial Finance Corporation now has a 35% shareholding in CTL

US manufacturer may take Siemens to court

THE US-based manufacturer, Systems Industries, is threatening to sue Siemens over a possible alleged infringement of the technology used in an ink dot matrix printer developed by the US firm's subsidiary, Silonics.

Silonics, based at Sunnyvale, California, developed its printer in conjunction with the Japanese chemical company, Konishi Roku, which includes Konica cameras and U-Bix copiers in its product line.

A spokesman for Systems Industries, which is also a major manufacturer of disc drive sub-systems, said that Silonics plans to sell the ink jet printer components to major printer suppliers rather than selling complete printers to end users. He said that Systems Industries was currently considering whether the Siemens PT80 technology infringes the Silonics technology.

If it does, Silonics may take Siemens to court.

The Silonics printer is not available yet in Europe.

The Silonics technology involves a piezo electric crystal which directs a stream of ink dots on to the paper, forming characters from a 7 x 5 dot matrix. The advantages of the technique over other non-impact serial printing technology are speed — the Silonics printer runs at 180 chps — and the fact that ordinary paper can be used.

The Siemens printer, called the PT80, also uses piezo electric technology to form characters, but it uses a matrix of 12 x 9 dots. The PT80 runs at 90 chps and was shown at the National Computer Conference at Anaheim, California, in June.

OP SPOT

By Bernard Allen

How to add a pseudo-writer

AN interesting spin-off occurred as the result of an Op Spot hint which explained how to modify the IBM OS pseudo-writer, often known as WTRZ or SCRAPIT, to erase output other than class Z (CW, May 18).

I was contacted by a system programmer who asked how he could add a pseudo-writer to his system, an IBM 370/135, running under OS/VS1, Release 5.

I must admit that I was under the impression that the writer was a standard feature of the IBM OS system, but that is obviously not the case.

My immediate reply was this: modify the JCL of a standard writer procedure by replacing the address of a printer with a DUMMY parameter, and add it to SYS1.PROCLIB as the pseudo-writer (Figure 1 is an example of a pseudo-writer).

But the programmer pointed out that the real problem was finding out how to direct the output listings of the readers, writers, initiators and mounts to output class Z.

I got in touch with several experts and finally found someone who knew the solution.

He said, "You have to modify two load modules which exist on SYS1.LINKLIB, and are loaded into storage at IPL time.

"The modules are called IEEVSTAR and IEEVMNT1, each of which has an *MSGLEVEL=1 parameter which must be replaced by *MSGCLASS=Z, in order to route the procedure listings to output class Z.

"To do this you must use the IBM SUPERZAP utility, as described in the Service Aids manual."

To understand the reason for this we must consider the following START command and the manner in which the OS system "builds" the JCL of procedures started via the console:

S WTR,004,,IOP

The system will take an image of the WTR procedure which exists on the procedure library (see Figure 2); the *MSGCLASS parameter, which actually routes the output to a particular queue, will be taken from the start module which exists in storage, IEEVSTAR; and the procedure identifier, by which the operator is able to recognise each particular procedure, will come from the START command itself. In the above example the identifier will be 004, the address of the printer the writer will use.

Here we have an example of the JCL of a typical pseudo-writer:

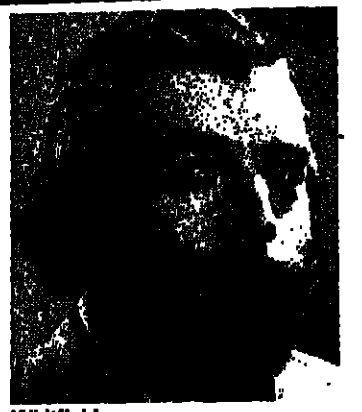
```
//IEFPROC EXEC PGM=IEFOSC01,
//             PARM='PM'
//IEFRDER DD DUMMY,DCB=(RECFM=FM,LRECL=133,BLKSIZE=133)
```

Figure 1

Note the DUMMY parameter which causes the system to erase the output served by the procedure, as opposed to routing it to a printer.

```
//IEFPROC EXEC PGM=IEFOSC01,
//             PARM='PA,IEFOSC05,1,,88,60,1'
//IEFRDER DD UNIT=00E,UCS=(HN,,VERIFY),DCB=(RECFM=FM,LRECL=133)
```

Figure 2



Whitfield

Departing from Barclays

AS mentioned a couple of weeks ago, there has been a steady flow of leavers from the London centres of Barclays Bank since last October when the details of the bank's relocation programme were made known.

One of the most recent is Dave Whitfield who was employed at the bank's centre at Harrow Road, Harlesden.

He is at present engaged on a six-month contract with Central Beheer, an insurance company based in Holland.

Sacked GEC men continue their picketing

WHAT happens at GEC's Stoke, Coventry site now that 16 of the 17 strikers have been sacked by the company?

Firstly, consider the operators themselves, many of whom I spoke to in Coventry on Friday, June 30, immediately after their meeting with Tim Webb of ASTMS, who advised them to return to work.

Despite the fact that the operators were under the threat of dismissal — a threat duly carried out by GEC on Monday, July 3 — all insisted that they were determined to carry on with the dispute. They are continuing to picket.

Brian Hamilton, the telecommunications equipment controller for the operations department and formerly an operator at the site, is the one who decided to return to work.

He explained that he had nothing to gain by staying out. Despite the fact that his position is covered by the closed shop agreement between GEC and ASTMS, the union has no right to bargain on his behalf, so any improved terms the strikers gain will be of no benefit to him.

ASTMS continues to give the operators its full support and has been joined by TASS in this regard, as confirmed by the mass walk-out at the Stoke site on Tuesday, July 4, and the subsequent two-day strike.

TASS became involved in the affair because 100 contract engineers at Stoke, many of whom are TASS members, have been suspended by the company without pay.

What of the company itself?

The spokesman for GEC was reluctant to tell me how the company intends to keep the computer systems at Stoke in operation now that the operators have been dismissed.

Members of the company management, and the systems and programming staff have been providing a user service while the operators' dispute has been on. But how long can they continue?

John Hardie, the GEC shift supervisor who is the operators' union representative, told me: "Although they are not working a twelve-hour shift pattern, as we do, some of them are beginning to look distinctly tired."

The company is likely to be thwarted should it attempt to recruit any new operations staff, because only ASTMS members are allowed to operate the machines, under the agreement with the union.

It may be supposed that the company will at least consider using a bureau service to get the computer work processed.

HINT OF THE WEEK

Program interrupting

This week's hint deals with the operator/program interface in the George 2 environment and is sent by Ron Linton, who is computer operations controller at Manchester Polytechnic.

He says, "There are occasions when the operator must interrupt a program, such as when special forms are being printed online because of a high volume of output."

Now George 2 does not allow the operator to act directly upon a program, but Ron has a way around this, by using two commands. These are the "skip to next command" (Go 29), and "take AT FAIL action" (Go 26).

He continues: "These commands can be used to cause George to effect any required action on the program, although Go 26 should be avoided in case the program should ever genuinely fail."

According to Linton, the following piece of job description will allow the operator alternately to set and unset a switch in the program by the use of Go 29. "Possibly to initiate the printing of dummy forms when printing online."

```
80  ENTER 0
81  AT HALT 'END OF RUN',
       GO TO 83
    AT FAIL, GO TO 84
82  SWITCH ON 1
       RESUME, 81
       GO TO 82
83  ———
```

He concludes, "Once the program has been entered, the 'next command' will always be either SWITCH ON 1, SWITCH OFF 1, or GO TO the line which says the times at which you can SWITCH ON 1."

Win a prize for your hints

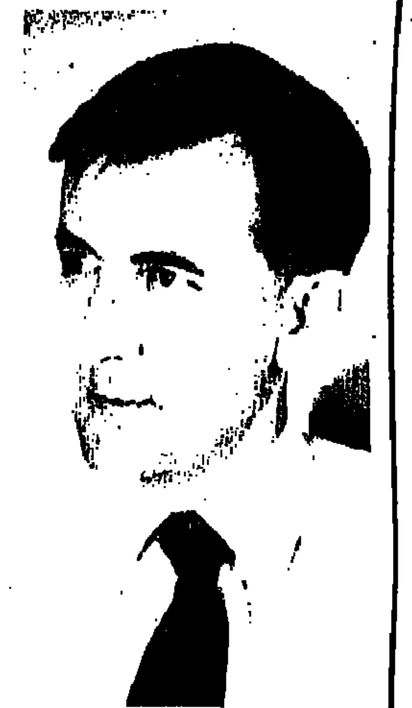
A £5 PRIZE will now be awarded to each person who has a hint published in Op Spot. Remember, the hints can be of a technical or non-technical nature.

Please be sure to state your name and place of work, also giving a telephone number and the times at which you can be contacted.

The computer industry's most widely-read author and best-attended lecturer, James Martin, was in London last week, to give his fast-moving and information-packed five-day course on "Distributed Processing and Database Networks" at the Europa Hotel under the auspices of the Savant Institute. It was Dr Martin's first London course since he left the IBM Systems Research Institute on April 1 to devote himself entirely to lecturing and writing on behalf of the industry as a whole.

Leaving IBM has not changed any of James Martin's views on the inevitable trend towards more and more distributed processing, nor on the vital need for companies to integrate all their widely used data into applications-independent databases. But it has removed all his inhibitions on commenting on current industry trends and user experiences, even when these cut across some of his former employer's program products.

FRED LAMOND attended the conference on Computer Weekly's behalf and interviewed James Martin exclusively.



MARTIN . . . "Grosch's Law has not just been repealed, it has been stood on its head."

Europe in need of competition in telecoms

THE plunging cost of data processing was commented on by James Martin during his seminar. "During the last five years," he said, "Grosch's Law has not just been repealed, it has been stood on its head. In 1977, the Data General Eclipse mini offered 10 times more ips (instructions per second) per dollar than medium-sized IBM 370s, and Intel 8085 micros 10 times more ips per dollar than the Data General Eclipse."

Fred Lamond took up this point and asked, "Now that this has happened do you see any justification for centralising either data processing or databases other than for a company's general administrative or operating environment?"

James Martin: The more you distribute processing to the points where the data originates and/or the results are required, the more you save on line costs. But there is a strong case for centralising databases when data is required by more than one part of a company, transactions arising from a number of different points update the contents of some database records interactively, or when the database as a whole has to be searched on a content basis. Searching a distributed database would be unbelievably cumbersome.

Seminar Quote

The competitive clash between AT&T and IBM in the 1980s will be excellent for the industry, and excellent for the American user. One can only hope that the State-owned European PTTs will not hide too complacently behind their statutory monopolies, but follow AT&T in some of the revolutionary facilities it is planning for the switched US telephone network.

FL: With software bottlenecks on large centralised installations, and similar software bottlenecks in the development of integrated networks, isn't the easiest way for users to get new applications running to put in free-standing minis?

JM: That is what is happening all over the place. But when you look at the data that those free-standing minis process, you find that 70% of it is not unique to the mini's user, but is also used at some other site within the company. So incompatibilities between processing methods on dispersed minis is rapidly leading to complete chaos in data handling in many corporations, which it will cost them a fortune to untangle.

FL: What is the solution?

JM: Central computing departments must take control of distributed processing, instead of trying to stonewall against it by vetoing fund allocations at corporate level. They can't stop user departments acquiring their own minis, especially as long as they quote two to four year lead times for new applications development.

But they can lay down company standards for record and field formats conforming to a central database, as well as for message formats for data to be exchanged between sites. If that is done, it doesn't matter so much whether the distributed minis exchange data with the central system online or via magnetic tapes or diskettes.

FL: Do you think that the new breed of 32-bit minis that are IBM 370 compatible — like the National Semiconductor C400 or Magnuson M80 — will help central DP departments in maintaining compatibility between central sites and distributed processing sites?

JM: Certainly, but strictly speaking you don't need machine code compatibility at all points, any more than you need a single supplier for the central site and all distributed minis. As long as all the minis in an organisation conform to common database record and message format standards, it doesn't matter who makes them and what their own internal machine codes are. It would help if they plugged into a common network architecture.

FL: What about programming them?

JM: You will never get applications developed for all the mini and microcomputers that the industry is capable of manufacturing if every mini and micro is programmed in a unique way for its own user's applications. Centralised development of standard applications programs for minis and micros to be distributed around a corporation to execute common tasks at different sites makes sense and that can bring down costs adequately.

FL: What consequences do you foresee if European telecommunications facilities fall further behind and remain much more expensive than the North American ones?

JM: Computer and network usage will differ more and more between North America and Europe, making it more and more difficult for each side to benefit from the other's experience.

FL: But is that necessarily a bad thing? Higher European communications line costs and lower line reliability have already encouraged European manufacturers to take the lead in developing intelligent banking terminals. European industry might thus be helped to take a lead in the direction of distributed processing.

JM: You may be right as far as data processing is concerned. But you must also consider the other traffic, which does represent 90% of communications line usage, even in America. The cheaper, much wider bandwidth long distance communications made possible by communications satellites will encourage much more frequent teleconferencing among the top executives of large corporations located in different regions and countries.

If European executives cannot use telecommunications as easily in the 1980s as their North American counterparts, they will manage that much less competitively.

FL: You mentioned communications satellites. How long before individual house-owners can pick up TV programs direct from satellites via dishes on their own rooftops?

JM: Soon in Japan, where the Japanese broadcasting authority has planned a TV satellite. Receive-only satellite antennas now sell in Japan for about $70 each. Twoway satellite antennas capable of sending to as well as receiving from satellites are more expensive at about $100,000.

The main application I see for direct satellite programs is in educational and training programmes, which will be the great growth industry of the 1980s to replace the office jobs being lost to office automation. And this is a field in which Britain currently leads the world.

Nowhere in my travels have I yet seen videotraining programmes of the quality and effectiveness of the BBC's Open University, which currently produces some 250 new programmes a year.

It is tragic that most of them are broadcast on BBC once a year at times when most of the population misses them, such as 7 am. The BBC should be beaming them to TV satellites and make them available to the world population as a whole. Or else market them on videocassettes or the new Philips videodiscs.

FL: Do you think direct home pickup of TV programs from satellites will be a precedent for the European offices of large multinationals to put Satellite Business Systems antennae on their rooftops with or without Post Office approval?

JM: It might be difficult to stop them from putting up receive-only antennae. But they would still need a Post Office licence to broadcast acknowledgement signals back to the satellite, or else would have to use Post Office and other common carrier cables for these acknowledgements. But to the extent that this made data transmission from US to Europe much cheaper than in the reverse direction, it would encourage the concentration of corporate and other databases in North America, which is an aspect of data dependence that European countries are currently trying to avoid.

Seminar Quote

Public packet switching networks have very high overheads and require a very high volume of utilisation to break even. Canada's Datapack is losing money, and so will the planned European networks like Transpac until the mid-1980s at least.

Seminar Quote

Application development must be improved in the 1980s to match the higher output and falling prices of hardware. We need much higher level languages in which each line of coding may have the power of up to 200 lines of Cobol.

It would be far better and more effective for the European countries to follow the US in allowing competition in telecommunications by allowing, for instance, the "value added common carriers" who have done so much to revolutionise American telecommunications in the last five years.

FL: The European PTTs often justify their monopolies by claiming that it enables them to provide telecommunications at a lower cost to the residential user and small business than they would be able to if private companies were allowed to cream off the lucrative private line business for large corporations. What do you think of this argument?

JM: There is no doubt that SBS and other satellite services will appeal mainly to the 200 largest US corporations. If SBS creams off their business, AT&T may have to charge its remaining users more. But if it hadn't been for SBS competition, AT&T might never have decided to develop the new facilities it is now planning. So it is difficult to prove that any class of user stands to lose from the increased competition now available in US telecommunications.

Most technological advances have come from new entrants into a market. Most established suppliers tend to be locked into the past, especially when they are Quangos (quasi-autonomous national government organisations) with statutory monopolies. What Europe desperately needs is competition in telecommunications.

An oral link between machine and man

IN the preamble to Professor George's article, Machine shall talk unto machine (CW, June 29), it states, "It would be ideal if we could devise a method of verbal communication between machine and man." Surely this was done years ago with the development of the high level languages, which sought to replace strictly coded programming systems with more natural verbal systems.

The article itself is concerned with speech recognition which implies not merely verbal but oral communication, a different problem altogether.

When discussing language it is important to get the words right.

A. TOMLINSON

Congleton, Cheshire.

The Editor welcomes letters on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. All letters are liable to be cut at the discretion of the Editor, unless correspondents state that their letters may not be cut.

LETTERS

To: The Editor, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU

'Academic image' of BCS

MIGHT I be allowed to comment on two points in Op Spot (CW, June 22) about operators and the BCS?

The article starts by stating, "The academic image of the British Computer Society is thwarting the operations specialist group in its attempt to attract new members". I have always been at a loss to understand what is meant by the society's so-called academic image. A large number of computer staff in educational establishments are reluctant to join because they believe the society is so totally dominated by the commercial folk!

Too often "academic" is used as a term of abuse, to be equated with "irrelevant". If the complaint is that the society values understanding as well as knowledge and competence, there are no apologies needed on our part that such qualities are indeed often associated with qualifications.

Secondly, you refer to "the BCS entrance examination". There is no such thing; all with interests in computers and their use are welcome to join. What we do have are examinations that lead to professional qualifications. I certainly agree with Barrie Patman that following even part of these examination syllabuses can be of benefit to operations staff.

In conclusion, let me add how useful a feature Op Spot is, always informative and entertaining as well. Keep up the good work!

PAUL SAMET, President

British Computer Society

Employment—or an improved quality of life?

"LET those who would seek to abolish slavery consider the security, the dignity of service, the acquaintance with the arts of civility of which such a course would deprive those who are now slaves". Thus I imagine the moral predecessors of those who today fear the advent of a large labour surplus.

The large-scale introduction of micros will undoubtedly cause loss of employment, despite any governmental attempts to create useless work purely for the sake of propping up the employment economy. Until that economy is abandoned, the inevitable loss of essential employment implies hardship. The essential question which has not entered the discussion as yet is whether employment is a means or an end; why the dole is a poor alternative.

The majority of workers, especially manual, are employed to earn money, not for the fun of it. If then wealth can be produced without them, the issue lies in a social structure which will pass that wealth on to non-workers. Initially, either the dole will graduate to a national dividend, or the working week may be shortened to a token. If the wealth is not provided, the resultant depression will no doubt end as all others have done, in revolution or war.

The other issue raised, concerning the humiliation of unemployment, is again purely a product of a society geared to use its talents in regular employment. The creative urge — if indeed exists — has been used in organised labour, but is in no way a desire to become part of an employment machine. Freedom from the necessity to sell oneself, frequently termed prostitution, can imply the freedom to work for one's own satisfaction irrespective of the commercial value attributed to that work.

The dissatisfaction of the present generation of unemployed arises from a society and an education directed away from development of individual faculties in favour of the employment ethic. Full scale introduction of micro-electronics can make a return in society to personal fulfilment without the need for labour possible; in effect, a return to aristocratic society, without the need for a repressed labouring class.

However, unlike the traditionally effete aristocrat, modern man has the tradition of practical endeavour. Freedom from directed labour may mean for many not simply leisure but the opportunity to revive traditional arts and crafts which factory employment has all but eliminated. Under present conditions, these crafts are not economically viable, and therefore no longer undertaken seriously. The growing dissatisfaction with the low quality of mass produced goods is timed very well to suit an age when the time for individual craftsmanship may become available.

What is essential in approaching the potential liberation of full automation is the realisation of how society can use the facility, not, as is too often the case, of how the facility can be trimmed to suit an exploitive society. At the worst, with no serious planning, unemployment pay will be forced to rise and taxes with it, moving toward a national share in national industry.

Payment without reference to amounts earned by personal endeavour, effectively a national dividend, would allow for incentives to improve one's condition with activities or crafts which are, on their own, unviable. These may be practical or purely in the fields of broader education. Formal education itself may be freed from the constraints of scientific training and directed again to providing the broad base and techniques of acquiring and utilising knowledge.

The great men of the Victorian, Georgian, Renaissance and Classical eras were not labourers: they worked largely for their own benefit from their own private means. It is merely prejudice born of Victorian employers' cynicism which makes this society, in contradiction to all others, value labour as a virtue not a necessity, a freedom not an imposition.

What must not be allowed to happen is the exclusion of the majority from the wealth earned by automata. A parallel may be drawn from late antiquity in which ownership of the means of production became concentrated in ever fewer hands, reducing the erstwhile middle and lower classes to serfdom although total wealth was not decreasing.

The micro question ultimately rests not with theorists, nor with lobbies for or against: they will be used, and much labour will become redundant. It is for ordinary people to ensure that their benefits are shared; it is especially important for the labour unions to determine whether employment or the improved quality of life is their aim, and to forego dogma to achieve practical benefit.

Remember the slaves: freedom without preparation is worse than slavery, but society may envisage a time when slaves can rise if change occurs

I. WHITE

Calne, Wilts.

COGARVIEW

This revolution will not stop with telling the time

THE computer industry is unique in a number of ways, one of them being its ability to analyse exhaustively technological and market developments long before they actually happen. For example, take the hoary old chestnut of the computer-in-the-home.

Ten years ago, it was being widely predicted that every home would have its computer by the mid-seventies. Five years ago, when it was clear that at least the time scale has been misjudged, it was being said that this would happen by the early 1980s. Today, I am willing to bet it will never happen, personal computing development plans devolved on the telephone or the home TV set, notwithstanding.

This is not to dispute that telephones and TV sets with extended capabilities (some of them computational) are coming, or that there may be room for home facsimile services. But to use a dedicated minicomputer on your income tax or to calculate the effect of inflation on your shopping bills would be a grossly cost-ineffective application, and calculators are quite sophisticated enough for anyone's day-to-day needs.

Yet, there is no doubt that people whose jobs bring them no nearer a computer than their quarterly electricity or gas bills are becoming more familiar with the broad techniques of computing. Electronic calculators do amount to a revolution. Three or four years ago, they were curiosities; today most households can boast at least one.

Protagonists who claim a phenomenal rise in the popularity of hobby computers, mostly people with vested interests, are suggesting that hobbies may be the back-door by which computing proper may eventually invade the home. But they may be wrong. Probably they are quite wrong.

It is some time now since Hewlett Packard introduced the HP-01, a splendidly binary model number for what they call their "wrist instrument". You can't call it a wrist watch. It does tell the time, but that's not the half of it. It can also be used as a stop-watch/timer, a calendar, a calculator, an alarm clock and a memory to take elapsed time readings.

The watch market has gone electronics crazy. The Swiss, whose precision clockworks have dominated watch-making for so many generations, are gnashing their teeth. The customers have deserted them for Texas Instruments, the Japanese, Hong Kong, Taiwan — anyone who can throw together a chip, a LED and LCD and a moulded plastic case. The revolution that micro-miniaturisation has wrought is on, and it will not stop with telling the time.

Already, NASA has produced a detailed study of a putative $10 "wrist radio" which would bring instant two-way communication within reach. NASA's study depends on the launch, in the late 1980s they say, of a giant communications satellite up to 150 feet in diameter and with a 25,000 channel capacity.

PTTs would have to do quite a bit of re-thinking concerning their telephone policy, and in hte US, AT&T would have to multiply the intensity of its push into new markets, if this pipe dream should ever be realised on any scale.

A little nearer earth is the matchbox-sized pendant transmitter produced by Microlert of California. It is designed for coronary patients and others who might need urgent medical help at any time. It is a one ounce transmitter which triggers a receiving unit up to 300 feet away to make a series of pre-programmed telephone calls to summon aid.

Today's mainframe makers stay aloof of the fast-changing wrist watch scene, but they do venture as far as pontificating about the future. For one, Univac's resident crystal-gazer, Earl Joseph recently predicted that in the 1980s, we'll be wearing wrist-mounted health monitors. His hypochondriac's heaven would contain sensors to take the wearer's pulse and temperature, assess skin moisture and even detect, in the air, unpleasant viruses. The theory is that people could begin to regulate the demands they make on their metabolisms, in order to avoid stress.

But why stop there? Surely in the 1980s, alarm mechanisms will be so small that they could be incorporated so as to give the wearer a buzz every time he approaches a lurking cold virus.

Seriously, though, the multi-function wrist watch will be a reality sooner than we might imagine. Just what exact functions it will incorporate is rather hard to predict.

MICRO NEWS

Edited by Martin Banks

Industry likely to take up Catt's CAM

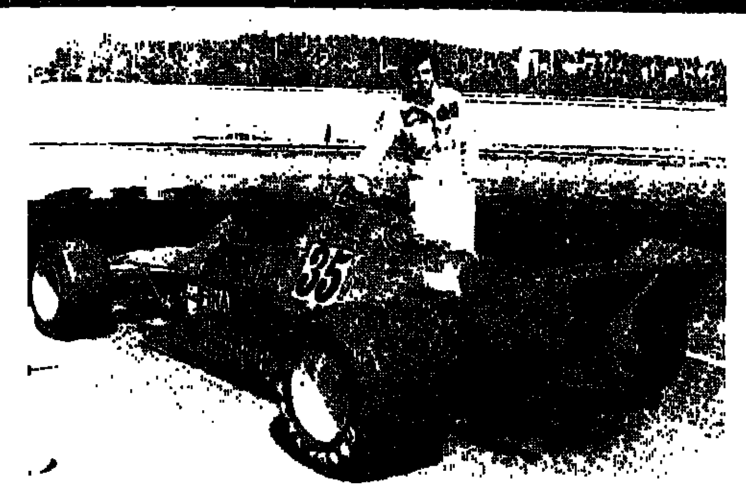
WITH a strong recommendation from the Middlesex Polytechnic research team that the research project which was funded under the Government's Advanced Computer Technology Project should be taken up by industry, Ivor Catt's Computer Associative Module invention (CW, December 8, 1977) is likely to become an industrial venture.

Though unconfirmed, there are hints that both Plessey and ICL, together with several British radar companies, are interested in developing the invention, which has been proved to be both technically and commercially viable by the Middlesex Poly.

In the CAM invention, a 128K bit serial shift register memory would be constructed on a semiconductor wafer. This would be a self-organising device, capable of bypassing defective circuits on the wafer. It would be used intact, without requiring the costly packaging and testing found with current semiconductor devices.

Used in conjunction with Property 1a, a computer architecture developed by Catt and currently being funded by ACTP at Brunel University, the CAM invention could be used to create a content-addressable computer system in which much of the data processing is carried out within the memory.

Catt said last week, "I am pleased to see that there is growing interest in CAM. I am gratified by the initial response, especially from the radar companies, where CAM is well suited."



Standing beside the Arrow Formula One racing car is Ricardo Patrese who, until the installation of the Scicon microcomputer-based data acquisition system, tested the car's performance by the seat of his pants.

System on-board to test race car

"ALTHOUGH we use similar design rules and the same materials as those used in aircraft manufacture, an aircraft designer would be horrified at the way we test a racing car." This, according to Jackie Oliver, owner of the Arrows motor racing team, was the main reason for a collaborative program with Scicon Micro Systems that aims to put an on-board microcomputer data acquisition system in a racing car for the first time.

Current testing procedure consists, he said, of asking the driver how the car "felt" while being driven, and the driver answering on the basis of data acquired from his finger tips and the seat of his pants. The type of data the car designer needs such as accurate measurement of lateral acceleration during cornering, or suspension deflection of individual wheels, can only be guessed at.

In this new venture, Scicon is installing a battery-powered Zilog Z80-based microcomputer system in one of the Arrows racing cars. Equipped with 20K bytes of RAM, which is expandable up to 48K bytes, the system can monitor a total of 16 channels, with a 0.2 second sampling rate.

In operation, the system will be used to help the racing team perform the vital task of "setting up" the car to suit a particular driver on a particular circuit. Storage of data starts once racing speed has been reached, and a maximum of eight minutes data can be held from the analogue transducers sited round the car.

When testing is finished, the 10 lb microsystem is removed from the car, and selected data called out, either numerically or graphically on a teletypewriter. The data can be selected on the basis of specific transducers within specific time limits, to give information on the car's actions at various points on the circuit.

It can also be used to calculate accurately road speed at any point, a calculation that includes such variables as engine revolutions, gear ratio and tyre growth.

Scicon's interest in the venture is primarily centred around developing its skills in installing systems in hostile environments.

Offer from Bleasdale

CONSULTANT Eddie Bleasdale, who specialises in systems development work on the Motorola 6800 family of microprocessors, has developed his own microcomputer system for use in control and monitoring applications.

The development of the system has been based on the fact that for the majority of applications, the hardware requirements are similar. Bleasdale's system, therefore, uses a modular approach to cover the range of variable requirements normally found.

The range of modules include a variety of I/O systems, such as a parallel I/O board, a serial I/O board, and an IEEE 488 instrument bus module. In addition, one or more slave processors can be added.

Bleasdale will be selling the system configured to meet users specific requirements.

£500 buys a Bomp

UNUSUAL sophistication and a "bargain basement" price characterise the latest microcomputer software package announced by CPU Computers, of Woking, Surrey. The company has developed a bill of materials processor which runs on an Intel 8080-based system and costs just £500.

Developed by the firm's subsidiary, Micro Systems Software, the Bomp package is written in Intel 8080 assembler. It offers a substantial set of processing functions, ranging from the maintenance of assembly and component data to the production of parts lists (explosions) and where-used lists (implosions).

Although operable on its own, the Bomp software can also be linked with the company's Inventory Management package. A complete stock management system can be built in this way, including such functions as the issuing and allocation of stock to production lines. Price for both packages together is £750.

Formed in 1973, CPU Computers has been manufacturing its own 8080-based system, the M-One, for about 18 months and has made about 150 installations. A single terminal system costs around £6,900 while one including twin VDUs is available for under £10,000.

IBM spends $25m on Intel memories

ONE of the largest single markets for semiconductor memories seems set to open up, following an agreement between Intel and IBM covering the supply of 2147-type, 4K static RAMs. Industry observers are now speculating on the possibility that the mainframe giant, itself reckoned to be the largest manufacturer of semiconductor memories in the world, is running into critical memory shortages.

The agreement, about which Intel officials in Sunnyvale declined to comment, is said to cover the supply to IBM of a total of 500 Megabytes for a total of $50,000 per Megabyte — a total of $25 million.

Intel will be supplying the memories probably as 1 Megabyte board systems, with deliveries expected to start at the end of this year and continuing for about 15 months.

Although there has been no official comment from IBM, it has been suggested that the Intel memories are required for its 303X systems. The demand for add-on memory over the next two years is currently estimated at 12,000 Megabytes for 303X systems, and IBM is expected to shop for only half of that.

It is understood that Memorex, National Semiconductor, Intersil and Cambridge Memories are among the companies planning to supply add-on memory for 303X systems in the $80,000 per Megabyte price range, while IBM's add-on price is $110,000 per Megabyte.

It is being suggested by US observers that Intel's silence on the deal stems from continuing negotiations between the two companies for the supply of 16K bit memory devices.

If these negotiations go through, it is likely that the part will represent a considerable departure in packaging style for Intel.

Though the chips would be conventional 16K devices, IBM will expect them in one or two package configurations. Both require that two devices are packaged together to make a 32K bit module. The first is a square package that uses solder bumps instead of leads for connection. The other involves stacking the two devices vertically in an 18 pin package.

The main reason seen for IBM to be forced to outside memory suppliers is that its own 303X memory systems use 2K RAMs, and that its production capacity is already full making these devices. In addition, competition in the mainframe market is forcing IBM to move faster than its previous memory design cycle would allow.

Barcelona came up with no easy solutions for the services industry

Over 530 delegates and 180 "accompanying persons" converged on Barcelona for the First World Computing Services Industry Congress. This was the first worldwide jamboree for bureaux and software houses, and was a friendly social occasion. It was sponsored jointly by the European Computing Services Association, the Japanese Software Industry Association, and ADAPSO from the US, with the organisation largely done by Alan Benjamin and the British CSA. Here one of the conference delegates, STEPHEN VALDEZ (pictured left) from Data Sciences International, gives his personal impressions.

"WHERE you going to — Barcelona. Do you have to — yes I do." The words of the number "Barcelona" from Stephen Sondheim's musical Company rang through my mind as the British Airways Trident deposited me at Barcelona airport for the First World Computing Services Industry Congress. Some 530 delegates from 26 countries were to meet for the best part of four days to discuss the common problems of the industry.

Making my way with other delegates to the Princess Sofia Hotel, I wondered quite what one expected from such gatherings.

Certainly, there were no easy solutions. The problems of the industry — personnel, software, response to minis, etc — are remarkably similar from Hong Kong to Japan and Mexico to India. There were no panaceas, no shattering truths — just businessmen responding to a challenge in their own way.

The conference divided its time between full plenary sessions and a series of workshops addressing such topics as privacy and security, microcomputers, telecommunications, batch bureau response to change, etc. Sometimes the choice was difficult as two workshop themes caught one's eye yet both were held at the same time. Unfortunately, the proceedings were not recorded or published in any way so that it was difficult to compensate for sessions that had been missed. In theory, speakers should perhaps issue their papers in writing beforehand and publication might then be possible.

In practice, submitting well over 100 speakers from different countries to such disciplines is a daunting task. Most of the sessions I attended were well prepared but a minority of chairmen were less than adequate in their coordination of material and handling of discussions. All this is somewhat outside the control of the organisers.

In so far as things were within their control, the organisation was excellent. Coping with 530 delegates and 150 wives is not easy but the central administration was efficient, the hotel coped well and only the software controlling the lifts caused irritation. It was described by an OR man as "Spanish Queueing Theory" and one Japanese delegate, asked how long he'd been waiting, replied, "Three days". Whether this was language difficulty or inscrutable Oriental humour we weren't sure.

It was interesting to contrast this conference with the one ECSA held in Brussels in 1975. On that occasion, there was a degree of uncertainty in the air in the face of minicomputer developments. There was a sort of quasi-religious questing — what must I do to be saved?

Barcelona was altogether more confident with an industry believing it had met the first challenges well and that it was prepared for what was to come. There was near universal acceptance that minis were to be used as a adjunct to the bureau service.

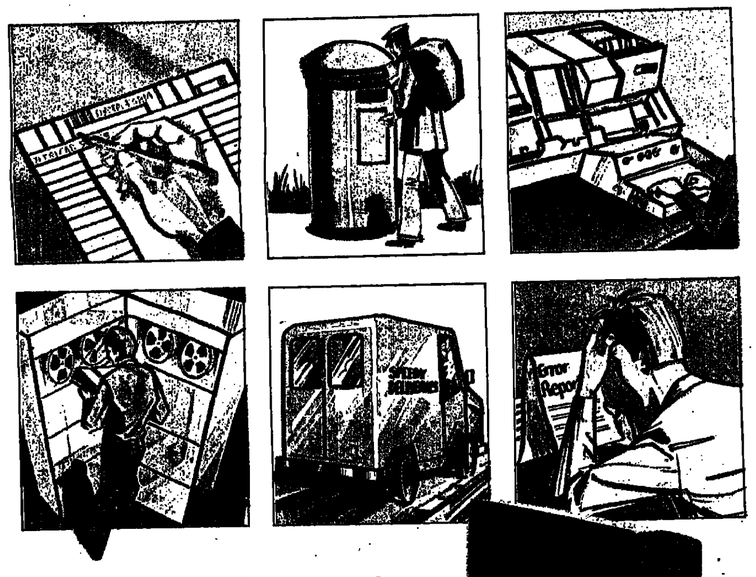
A key controversy which did develop was whether bureaux were right to offer minis as a profit activity in its own right, ie with no bureau processing attached. Naturally, those doing so defended this view vigorously, in at least one case backing up their arguments with very detailed profit and loss accounts. This, I feel, is a theme to which the next conference will return.

The confident mood of the conference may have owed much to a fine opening address by Frank Lautenberg of Automatic Data Processing Inc, which produced a net profit before tax of $50 million on a turnover of $300m. He believed that, just as radio had survived the onset of television, so computer service companies would re-adapt and prosper in the face of change.

The keynote, he argued, was service and not technology — the so-called "obsolete" batch processing techniques are both alive and well. Some of the euphoria induced by this speech may have been dispelled by Alec d'Agapeyeff of CAP in an address on the second day. In his view, the industry was over complacent in the face of revolutionary change from microprocessors. Mainframes were dead and many service companies would be caught with their trousers down.

Here were two opposing views — evolution or revolution? I discussed this issue with Bryan Mills of CMG, perhaps from the common viewpoint of two people who had trudged the streets with an adding machine under the arm, aeons ago. Somehow, we felt that businessmen remained inherently cautious, that previous confident prophecies had come unstuck (whatever happened to Grosch's Law?), and that perhaps Frank Lautenberg might be the one to be right in the end — "the future may well be more like the past than we suspect."

Sooner-or-later data processing . . .



– and the alternative

There's no simpler solution to data entry problems than the Model 770 Intelligent Terminal. It checks and verifies data at the point of origin, and then feeds it, *error free*, directly to your main computer.

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Error-free data entry from any point you choose . . . the 770 can only make your business a great deal more efficient. Call the nearest TI office, or complete and send the panel for full details.

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Stockport Tel: 061 442 8448 Slough Tel: 0753 35545

Name

Position

Company Address

Tel. No.

770/MT/78

R-range Facts

Hardware

R100	8 terminal data entry and distributed data processing system
R300	20 terminal data entry and distributed data processing system
R400	48 terminal data entry and distributed data processing system
R550	30 terminal mixed media data entry system
R830	8 micro terminal distributed data processing system
R850	24 micro terminal distributed data processing system

Software	R100	R300	R400	R550	R830	R850
Multi-Tasking Operating System	●	●	●	●	●	●
Virtual Memory	●	●	●	●	●	●
Virtual Terminal Operation	●	●	●	●	●	●
COBOL– like Application Language	●	●	●	●		
Format Language	●	●	●	●		
Inter-active Program Development	●	●		●		
Test Editing						
Systems Log	●	●	●	●	●	●
Operator Statistics	●	●	●	●	●	●
Re-entrant Code	●	●	●	●	●	●
Stack Processing	●	●	●	●	●	●
Independence of Data & Code	●	●	●			
Structured Data Sets	●	●				
Multi-level Indices	●	●				
Multi-level System Security	●	●	●	●	●	●
Command Sequence	●	●	●	●	●	●
Data Entry Software	●	●				
Distributed Data Processing Software	●	●				
Dynamic Disk Management	●	●	●	●	●	●
Seek Optimisation	●	●	●	●	●	●
Full Range of Utilities	●	●				

Data Communications						
Burroughs TC 3500	●	●	●	●		
Burroughs TD 830						
IBM 2780/3780/3741	●	●	●	●	●	●
IBM 3270			●	●		
HASP RJE			●	●		
SDLC	●	●	●	●	●	●
ICL 7020	●	●	●	●	●	●
ICL 7502/3	●	●	●	●	●	●
ICL 7181						
Redifon Synchronous	●	●	●	●	●	●
Redifon Asynchronous	●	●	●	●	●	●
Univac 1004	●	●	●	●	●	●

Derbyshire councils vote for 2900s

MORE local government orders for ICL 2900 series machines were announced last week by Derby City Council, which is to take a medium range 2950, and the nearby Amber Valley District Council which is to install a 2904/50.

Due to be installed in September, Derby's 2950 will support online computing facilities for 12 terminals in various departments previously handled by an ICL 1902S, which it will replace. Applications include house rents, building regulations, and planning applications, and Derby will initially use ICL's DME 1900 emulation package.

Derby's 2950 is valued at £370,000 and it has 512K of main store, four 100 Mbyte disc drives, four 7502 terminal processors, and a 720 lpm printer.

Amber Valley's 2904/50 system to be installed at Heanor, is valued at £160,000, and features 48K of main store, three 60 Mbyte disc drives, and six display terminals.

This system has been specifically designed by Bass Ten Systems for data logging in the poor environmental conditions usually found in processing plants or ships' engine rooms. Known as mDAS, the microprocessor-based system will accept up to 128 single-ended analogue inputs, or 64 differential inputs, together with 24 8-bit parallel digital inputs, for recording on 0.25 inch magnetic cartridges using the standard ANSI/ECMA format. Using CMOS devices, it can run from 11 to 30 volt DC power supplies, or the mains, and can be field programmed for such functions as random channel access and level checking. As well as its own playback facility, mDAS is equipped with a communications interface for connection to a remote terminal or modem.

Predicting the drift of a tanker

COMPUTER systems to predict the way a giant tanker will drift when broken down are proposed jointly by Liverpool Polytechnic and the National Maritime Institute. SuperTankers are so high out of the water that they catch the wind more than a clipper ship, and "sail" in unexpected ways when without power, according to the shape of the superstructure and hull.

ABS-BCSL link-up to boost sales

TO expand its manufacturing operation and strengthen its UK marketing, Allied Business Systems has taken over the Brighton factory of Business Computers (Systems) Ltd, along with its production staff, and has signed an agreement with BCSL under which the latter will sell ABS Multibus systems as well as its own Molecular computers. Under the agreement, ABS, which is owned by the Trafalgar House group, has an option to purchase the whole of the share capital of BCSL, 49.5% of which is held by BCSL's managing director, Mike Munnelly, and two other directors. ABS must exercise the option between now and the end of 1980.

ABS's managing director John Blagden told Computer Weekly that ABS was likely to exercise the option. It all depended on the sales performance of BCSL.

BCSL now effectively has the status of a systems house being supplied by ABS on an OEM basis with Multibus and Molecular processors, plus peripherals. Both firms use a similar range of peripherals and purchasing them jointly for both product ranges will save a lot of money.

ABS will continue to sell Multibus actively and has come to an agreement with BCSL which will prevent the firms from treading on each other's toes.

Blagden said: "ABS has had serious problems finding good professional salesmen with which to extend its existing salesforce and BCSL has a very experienced team of former Singer Business Machines men suitable for selling Multibus systems."

Blagden added: "We will continue to manufacture and supply BCSL with Molecular processors whether we buy BCSL or not. If we do acquire BCSL we will start thinking about developing one product range to replace the Molecular and Multibus ranges, although as a fairly small company we are flexible enough to continue manufacturing both.

"On the software side we could develop a Simple compiler for Molecular machines. "Simple is the high level real time language developed by ABS for Multibus systems.

ABS is transferring all Multibus manufacturing and assembly to Brighton from its existing factory at Byfleet, Surrey, which is much smaller than the Brighton plant, and is turning Byfleet over to software development.

The BCSL systems software development team will stay at Brighton, while the applications software section and marketing operation will continue at BCSL's head office at Borehamwood, Herts. Computer Field Maintenance will continue providing maintenance services to Molecular users.

NEWS IN BRIEF

ACAS ruling void—judge

A HIGH Court judge has ruled that the Advisory, Conciliation and Arbitration Service was wrong in not recommending union recognition for the UK Association of Professional Engineers in a dispute involving a Bedford engineering company. Although a survey showed that staff wanted UKAPE recognised, ACAS was against this because the union is not in the TUC, and there were threats of trouble from other unions. Mr Justice May ruled this was not a valid reason.

Japanese deal

THERE were growing possibilities that more UK-made electronic components would be used in Japanese equipment, Minister of State for Industry, Alan Williams, told Roderick MacFarquhar (Lab, Belper) in reply to a Parliamentary question. This followed a visit by the Minister to Japan.

Airfield control

FOLLOWING the completion of an initial order from the Department of the Environment's Property Services Agency, ATS Telemetry of Haywoods Heath has won a repeat order for its Type 1000 modular telemetry systems. For all RAF airfields in the UK the systems will be used to control airfield lighting including approach, edge, apron obstruction and VASI lights.

Data entry

A DATA entry system with 2.5 Megabytes of disc storage and one or two video terminals has been introduced by Data 100. Called the 77-107 it comes with data entry software. Options include IBM 2780, 3780 and Hasp communications.

Series 21 boost

OFFLINE communication with a mainframe is one of the uses for a nine-track desk-top magnetic tape drive introduced by MDS as an enhancement to its Series 21 distributed data capture system. Another enhancement now available from MDS is a 10 Megabyte disc drive for the user programmable version of Series 21, the 21/40.

Littlewood system

WEEKLY stock orders from 106 Littlewoods stores all over the UK are being collected for computer processing by a Redifon data entry system installed at Littlewoods' headquarters in Liverpool. The Redifon system has 25 terminals.

Gamma order

AN online financial dealing system is to be supplied by Gamma Associates to the discount houses. Called the system will support dealings in Treasury bills, bills of exchange, and sterling and dollar certificates of deposit, and will provide statistics for accounting and reports to the Bank of England. It is based on a DEC PDP 11/70 and costs over £200,000.

Entering an IBM market

ONE of the newest entrants to the IBM compatible processor market, National CSS, which sells the PI/32 built by the US-based Philips subsidiary, Two Pi Co Inc (CW, April 27), is to start shipping systems to US customers in November, according to a National CSS spokesman.

He said that two National CSS personnel were currently investigating the marketplace in Europe for the PI/32, which outperforms the IBM 370/138 and runs the National CSS time sharing oriented operating system, VPS. Active selling in Europe will probably start in about a year from now.

The National CSS spokesman categorically denied reports that his company was planning to buy IBM compatible processors from National Semiconductor or Magnuson Systems instead of from Two Pi.

● New IBM plug-compatible CPU for Europe, page 27.

£100,000 minis ordered

LEGAL accounting bureau services will be one of the main application areas for seven minicomputer systems worth £100,000 ordered from Digico by Automatic Information Management of Hull. They will also be used by AIM to capture and validate order details and management information for the bakery division of AIM's parent company, Wm Jackson and Son.

Four of the Digico systems will be installed at Wm Jackson bakeries at Hull, Stockton, Rotherham and Wakefield and will be linked to ICL 1904S and 1903A computers at AIM's main computer centre at Hull. The three others will be for AIM offices at Hull, Newcastle and Bradford.

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Of course, a distributed data processing system has got to be simple and reliable. The people who will be using it won't be computer specialists – they'll be accounts clerks, department managers, secretaries and warehousemen.

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You can speed up or slow down the programme at any time according to your changing needs.

As far as service goes, we're 'with you all the way.' There's a full range of back-up service, including customer engineering, systems support and comprehensive training.

The panel on the left gives you brief details of the R-range systems. But there is a lot more to it than that. To get the full story, complete the coupon. We will arrange demonstrations, send you literature or arrange for a representative to visit you, whichever you prefer.

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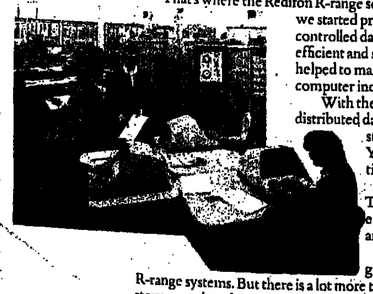

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Nora Report — an example of open government for the British to follow

ONE of France's most widely discussed and hottest selling books is Le Rapport Nora*. And deservedly so. It is wide-ranging and long-term in its approach, equally at ease in computer and telecoms technology and their sociological implications, and strikes the perfect balance between conciseness and readability in the main book, and depth of analytical detail in the four volumes and appendices that support its main conclusions.

What is most striking to a British visitor, however, is that a book with all these qualities should be the work not of academics but of a team of civil servants, drawn interestingly enough from a Study Group on the Information Society within the Ministry of Industry, and has been commissioned by the French President himself.

Even more remarkable is the fact that this official report should have been published for everyone in France to read within four months of being presented to the President — an example of open government one hopes the British government will follow when it receives the report on the long term effect of microprocessors that the Prime Minister has instructed the Central Policy Review Group to prepare.

The French report begins by summarising briefly the main current technological developments in computer and telecommunications technology: increasingly cheap minicomputers, microprocessors and semiconductor memories, multi-purpose communications satellites. It sees these as causing an increasing convergence between data processing — "l'informatique" in French — telecommunications and television into a combined technology which the report has baptised la télématique.

These technological developments present contemporary society with three challenges. Diminishing employment outlets is the first, and the one with which British readers are most familiar. Like many other observers, the Nora team sees computerised banking, PoS systems, and word processing as bringing the rise in service industry and office employment to a halt and even reversing it.

But it also emphasises that such personnel economies are the stuff of which increased productivity is made, and that maximum productivity in export and import replacement industries is essential in any economy dependent on foreign trade. French and British societies should therefore look primarily to non-market professions like teaching, the arts and leisure industries to provide new replacement jobs, and to highly automated export industries only to earn the foreign exchange with which to pay for the expansion of the non-market sector.

The Nora report breaks new ground, however, when it turns to the challenges that la télématique will present to existing power structures, and to national independence. The expensive computers of the 1960s favoured administrative centralisation and gave large organisations an advantage. The much cheaper mini and microcomputers of today give smaller organisations an opportunity to catch up. Much depends, however, on the data communications network architecture and control.

Hierarchical network architectures using private lines will continue to be only within the financial reach of large organisations.

To bring the benefits of la télématique within the reach of small firms and local authorities, public data networks with standardised interfaces must be provided.

These will frequently be opposed by powerful vested interests, and the Nora report gives some fascinating examples from within France: how the large commercial banks with branches throughout the country are opposing a unified bank network that would give small local banks the same advantage of easy accessibility via the network; how Air France is opposing a unified seat reservation network, accessible to independent travel agents and tour operators; and how a computerised information system at the new Rungis fruit and vegetable market in the Paris region has remained unused because it threatened to undermine the large wholesalers' monopoly on market price information.

ONE of France's most widely discussed and hottest selling books, a French official report on the Computerisation of Society, was compiled by a team of civil servants and published only four months after being presented to the President. FRED LAMOND (above) discusses the report, which studies the challenges that the new technology of "la télématique" will present to existing power structures and to national independence.

vice bureaux and time sharing industry. Such a data flight to the US would undermine the ability of European governments to control data collection and storage, notably on individuals via privacy acts, making all of Europe undesirably dependent on the US for all manner of essential scientific and economic data and ultimately impose American cultural patterns on the whole of Europe via the manner in which the American databases and their interrogation languages are structured.

The remedy proposed by the Nora report is a rapid improvement in European telecommunications networks to bring them up to the standard and down to the user cost of North American networks. But this improvement, and the definition of any interfaces with international satellites, must be kept firmly in the hands of the European governments working through their own PTTs within CCITT.

The report sees IBM's entry into the communications satellite business via Satellite Business Systems as a challenge — probably unwittingly — to the PTTs' control of satellite communications, and thereby, indirectly to the sovereign power of European states to control communications, and thereby to arbitrate between vested interests. It is a challenge that can only be faced by the European governments via their PTTs forming a common front with each other and perhaps with ATT to bargain on equal terms with IBM to define network interface standards.

> ***Cheap satellite communications might ultimately impose American cultural patterns on the whole of Europe.***

The Nora report foresees many more conflicts of interest groups, and proposes that the French state should intervene actively as arbiter, preferably on the side of the small and weak. But its ability to do so will depend on the PTT's monopoly on the provision of telecommunications channels remaining effective, and this is currently being challenged by the development of communications satellite technology. These abolish the effective economic cost difference between medium and long distance communications links, and make it no more expensive to communicate across the Atlantic than between one side of Europe and another, or even between one end of France and the other.

Cheap satellite communications might thus aggravate the current tendency for both public interest and private corporate database to be concentrated in the US, on the computers of the better organised American ser-

SET up at the beginning of this year (CW, January 19), Data Recording Equipment Ltd is a wholly-owned subsidiary of the Data Recording Instrument Company and embraces most of the operations of DRI before it became a holding company.

The change in DRI's status was made after it acquired VDU manufacturer Newbury Laboratories. The third DRI subsidiary is magnetic head manufacturer Data Recording Heads Ltd.

Data Recording Instruments is majority owned by the National Enterprise Board, which injected about £2 million into the company two years ago (CW, July 29, 1976).

DRE challenges the dominance of US suppliers

By Keith Jones

ONE of the few European original equipment manufacturers of peripherals to challenge the dominance of US-based suppliers is Data Recording Equipment, a firm which likes to think of itself as Europe's "local" OEM.

Exports to European customers outside the UK accounted for about 50% of DRE's £16 million sales in its 1977/78 financial year, which ended March 31, and DRE estimates that the proportion of its output ending up with Continental computer users is nearer 70% if units exported as part of complete systems by UK customers are included.

DRE's greatest strength is in the cartridge disc drive business, where it claims about a third of the European market, making it the biggest OEM supplier in Europe, bigger than any of its US competitors.

And it is also putting a lot of effort into increasing its share of the markets for its matrix printers, floppy disc drives and fixed disc drives — the latter being seen as a major growth area.

DRE's recently appointed marketing director, Jim Jamfrey, said: "In this business you have to get into bed with your customers and DRE can develop a much closer relationship with European customers than a US firm based 6,000 miles away.

"Unlike some US firms, we are prepared to do business with customers wanting small quantities like 10 units a month; and with big customers we can easily bring in people other than salesmen when they need support. We regard the service we provide as one of our great strengths."

DRE's marketing support manager, Ron Kirby, pointed out, "As a European-based manufacturer, we design our products to suit European customers, bearing in mind factors like peculiarities in power supplies and government safety and electrical standards relating to things like radio interference.

"Our 3200 front loading cartridge disc drive was designed by us specifically for European users and with really big customers like ICL we get together and do a lot of 'blue sky thinking' about their future product requirements.

"At the same time we still manufacture our original three Megabyte Series 30 front loading drive under licence from Diablo, even though the 3200 can hold up to 12 Megabytes on a cartridge. About 50,000 Series 30 units have been sold world wide by Diablo and DRE and people are still buying it.

"One reason is the extreme conservatism of the computer industry — just think how many people still buy the traditional teletype — and another is that a lot of customers do not want to change the configuration of an existing system. But they should move to the 3200 when they introduce new systems.

"One new type of customer for the Series 30 is the microcomputer systems builder wanting something more than a floppy disc drive. We are very interested in the predictions that have been made about the total European market for intelligent systems of one form or another. They put the potential total number of systems at about six million, with about a third of the cost of each system being accounted for by the sort of low cost peripherals that DRE manufactures.

"Another area we are looking at is the peripheral controller business. At the moment the only thing we make along those lines is a formatter for our floppy disc drives.

"The sort of development we are interested in is what could be called a total peripheral solution — a peripheral subsystem that can handle all the different peripherals in a configuration — to offer the customer one-stop peripheral shopping.

"The main problem is to decide which computers produce the subsystem for, because the interfaces required even by the minicomputers in one manufacturer's range are often different from each other."

One side of the business that DRE has committed itself to in a big way is the fixed disc drive market where it is weighing in with its Series 3300 against US-based suppliers like CDC, Kennedy and Shugart.

The 3300 drives are sealed modules containing between one and four discs with two read/write heads per recording surface and capacities that range from 12 to 74 Megabytes.

Each drive can also have 0.74 or 2.23 Megabytes of fixed head storage and there are two fixed head only versions with capacities of 2.97 and 5.94 Megabytes.

The 3300 drives employ Winchester type technology with light loaded non-retracting heads, Winchester being the code name commonly applied to IBM's fixed module disc storage.

The Series 3300 was developed jointly by DRE and the US peripheral manufacturer, Okidata, which is half owned by Oki Electric of Japan. Okidata's disc plant is in California, at Santa Clara just south of San Francisco.

This is in the heart of the area popularly known as "Silicon Valley" because so many semiconductor-manufacturers are based there. It is also a magnetic storage technology hothouse with IBM's magnetic products centre at nearby San Jose and firms like Memorex and Shugart also in the locality.

Not surprising, therefore, that DRE retains a consultant permanently in Santa Clara as well as maintaining a working relationship with Okidata.

At the moment that relationship is extremely close because Okidata is building the Series 3300 drives that DRE is marketing in Europe. This is despite the fact that DRE has exclusive rights to manufacture the 3300 on this side of the Atlantic.

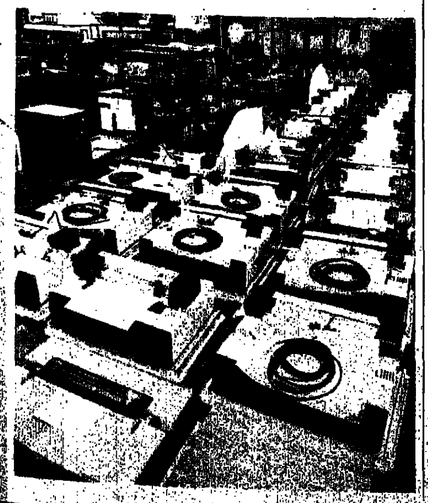
According to DRE's manufacturing director, David Dean, one of the main reasons for this state of affairs was the great difficulty that DRE encountered in finding suitable factory space to build the 3300 at either of DRE's two major manufacturing locations at Staines and Crewe.

Dean added that there were a few suitable buildings in the Staines area but that they get snapped up very quickly while, at Crewe, the problem was a shortage of modern property.

DRE makes most of the parts for its matrix printers, including one of the most important, the solenoid-driven mosaic print head. One of them is being checked here to make sure the needles that form characters can move freely.

ABOVE: Final diagnostic checks are carried out on DRE 4000A disc drives at the firm's main factory at Staines. The 4000A has one fixed disc and one removable cartridge disc and can hold up to 12 Megabytes of data.

BELOW: A batch of DRE 6320 output matrix printers ready for delivery to ICL, one of DRE's biggest OEM customers. The printers are to be used with ICL's cluster terminal system.



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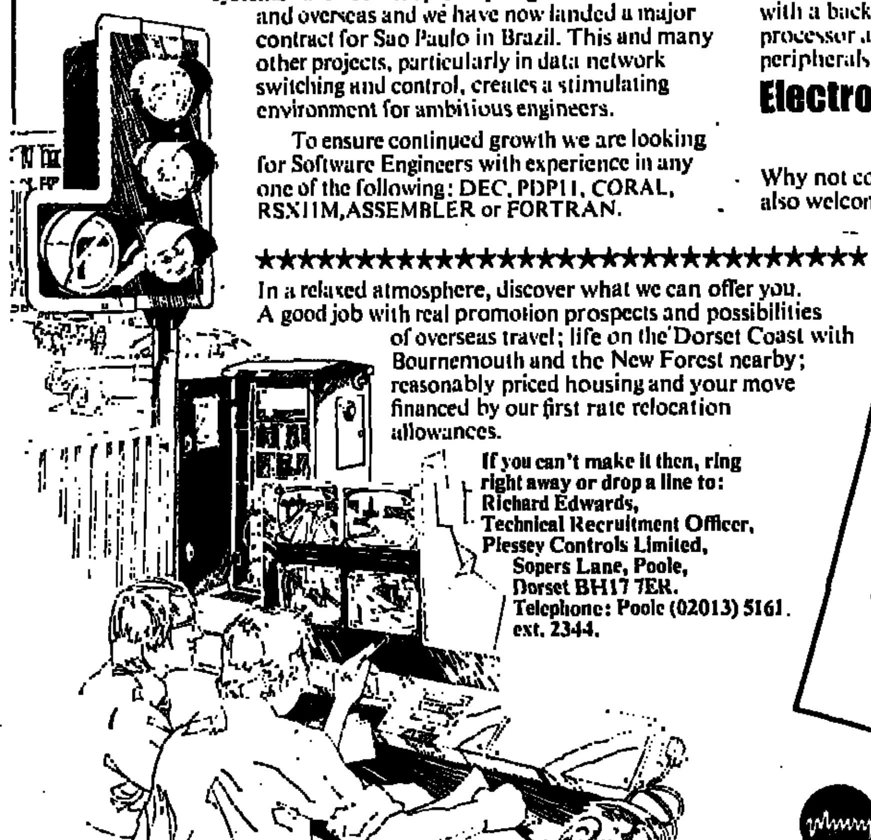

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Please write with personal details and career to date to:

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The prime requirement for this position is a successful record in all stages of development and implementation of major process industry computer systems. Experience of process control computers and associated software would be a distinct advantage as would a knowledge of Operational Research and Mathematical planning techniques. Detailed knowledge of Fortran is essential. Successful candidates should have a degree, HND or equivalent in a numerate discipline.

The Company has a Fox 2/30 process control computer installed in its refinery and future expansion will include the installation of a number of mini and micro computers. In addition, there is a system 370/135 and a linked system/3-12, both with batch and on-line processing. A major upgrade is also planned in this area.

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Quoting reference SA/CW

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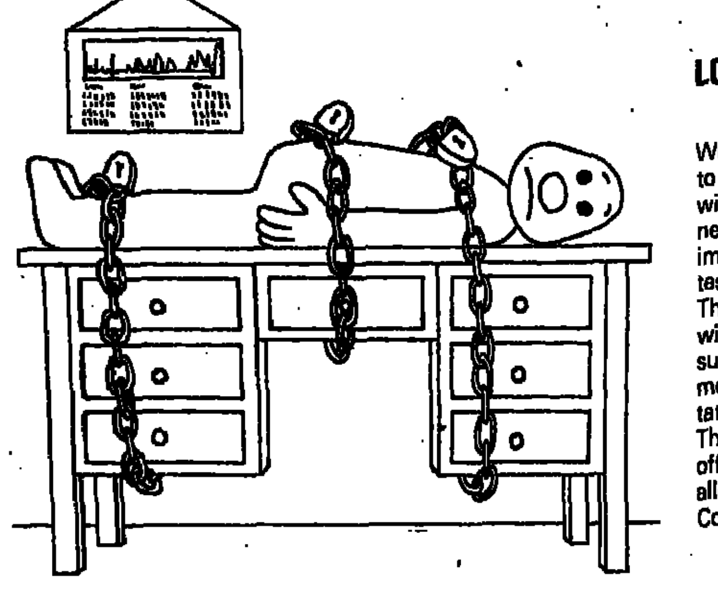

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NORTHERN DIVISION

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QUALIFICATIONS AND EXPERIENCE

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A degree or equivalent in a relevant discipline is required; together with a minimum of 5 years experience in the software field — preferably with a knowledge of COBOL. Experience in dealing with military customers would be an asset but is not essential.

Please telephone Graham Ince on Luton (0582) 417582 or write to him at P.E.R., 58 Park Street, Luton, Beds.

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Pioneer, an expanding Multi-national company with interests in ready-mix concrete, quarrying and asphalts are installing a Honeywell 62/50 128k Disk/Tape computer and require an experienced Operations Supervisor to join our D.P. Team.

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PIONEER

Contact: Roger Marquet on (01) 864 6611, or write to: U.K. Systems Manager Pioneer Concrete (Holdings) Ltd. 56-60 Northolt Road South Harrow, Middx.

HALTON BOROUGH COUNCIL
CHIEF FINANCE OFFICER'S DEPARTMENT
COMPUTER SECTION

An Order has been recently placed for an ICL 2904 with Discs, Magnetic Tapes and DDE's to replace the present ICL 1901 installation and is due to be commissioned in the Autumn. It is envisaged that future developments will cover a wide range of applications including on-line systems.

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Grade AP5/SO1 £4,773-£5,568

Applications are invited for the above posts from persons with several years systems experience using Discs and Tapes and a programming background which includes COBOL. The successful applicant must be able to take charge of a system from investigation to implementation and be capable of negotiating with user Departments. A knowledge of ICL 2903 job control language and direct data entry equipment is desirable but not essential.

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The above posts are based in Widness, and a system of flexible working hours is in operation.

The Council will be willing to pay in an appropriate cases reasonable removal expenses and make available accommodation to the successful applicants.

Applications in writing, giving details of age, qualificatons, experience, together with the names and addresses of two referees, should be forwarded to the Head of Personnel And Management Services, Halton Borough Council, Municipal Building, Kingsway, Widnes, Cheshire, WA8 7QF. Closing date 21st July, 1978.

R. Turton
Chief Executive

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For further details telephone 01-580 6622 extension 264. Applications, by letter to Central Computing Services Birkbeck College, Malet Street, W.C.1

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It's on the cards. We've got mini-computer makers and users and software houses with every conceivable configuration offering us the Moon for people with the languages in shortest supply:

Macro 11, RTLII, Coral, Assembler-level languages, all high-level languages.

Quite modest experience on top of one of those could put you up in the 5-figure salary class.

And experience of *operating system RSX11M* as well would pretty well clinch it for you.

As for micro languages, absolutely anything's marvellous. But if you have *Intel 8080 or 8085*, you have it made like Paul Newman used to.

Particular applications right now:

Micro processing, word processing, process control, message switching, flight simulation, radar systems, automated telex systems, communications, diagnostic programming, video typing systems, composition and typesetting.

Ring up Beryl McLaren on 01-836 9719 or 9882. And just speak your language.

Jupiter Computer Appointments
(Real Time Mini's Place)
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SYSTEMS DESIGNERS LIMITED

PROGRAMMERS
SYSTEMS ENGINEERS to £9,000
CONSULTANTS

INFORMAL INTERVIEWS

CAFE ROYAL, REGENT STREET
TUESDAY, 18th JULY

If a challenging career in an expanding top consultancy, where you will be working with a variety of computers in many application areas appeals to you, then please drop in for a drink and a chat with our managers and consultants. We are at the Café Royal, Regent Street, on Tuesday, 18th July, from 12 noon until 9 p.m. where we shall be pleased to discuss your career prospects within our Company.

If you cannot make it, telephone Bill Hockey on Camberley (0276) 63471 or write to him at:

SYSTEMS DESIGNERS LIMITED
Systems House
57-61 High Street
Frimley, Camberley
Surrey GU16 5HJ

Located at Frimley, Surrey, Systems Designers Limited is an independent British systems consultancy with an unrivalled reputation in mini and micro computer applications.

Established in 1968 and currently 180 strong, the company is expanding its operations in both the UK and abroad. A full order book and continued demands for our high quality service have produced an immediate requirement for a number of professional programmers, systems engineers and consultants.

Current projects are challenging and rewarding and the company policy of full participation and involvement of all members offers broad prospects and opportunities for rapid progress for top people.

Requirements exist in all areas for applicants with a good academic background and at least one year's software experience and who are able to demonstrate a capability to work in new areas of mini and micro computer applications. Principal areas of involvement are:

Basic Systems
Design of both new languages and compilers, consultancy, and development of micro based products.

Real Time Systems
Predominantly defence and involves the application of advanced techniques to engineering or mathematical problems.

Communications
Working in the fields of Message Switching (Military and Civil), Circuit Switching and Auto Telex Switching, mini and micro based systems.

Industrial
Design and development of Process Control and Data Logging Systems. RSX II experience especially interesting.

Salary is negotiable according to ability and experience, with optional BUPA and pension schemes, profit sharing and assistance with removals, where necessary. You will be based in modern offices in Frimley (Waterloo 46 mins., M3 2 mins.). Opportunities will occur for those interested in working in Europe. An active Sports and Social Club organises activities such as bridge, squash, football, cricket and regular dances and social functions.

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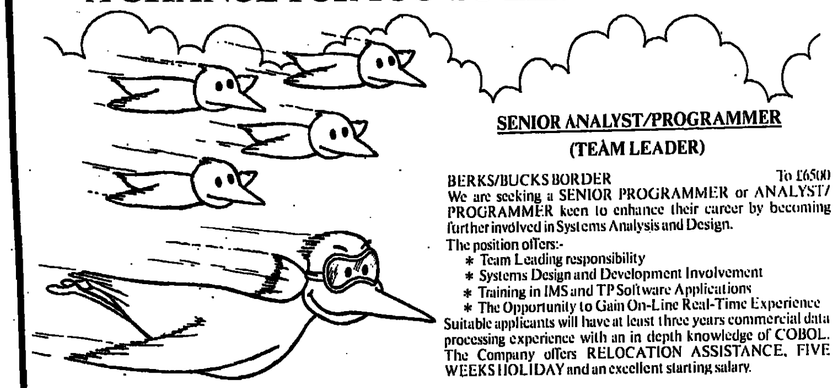
A CHANCE FOR YOU TO LEAD THE WAY!



SENIOR ANALYST/PROGRAMMER
(TEAM LEADER)

BERKS/BUCKS BORDER To £6500

We are seeking a SENIOR PROGRAMMER or ANALYST/PROGRAMMER keen to enhance their career by becoming further involved in Systems Analysis and Design.

The position offers:-

* Team Leading responsibility
* Systems Design and Development Involvement
* Training in IMS and TP Software Applications
* The Opportunity to Gain On-Line Real-Time Experience

Suitable applicants will have at least three years commercial data processing experience with an in depth knowledge of COBOL. The Company offers RELOCATION ASSISTANCE, FIVE WEEKS HOLIDAY and an excellent starting salary.

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA **01-353 0981 (24 hrs)**

PROGRAMMERS
ANALYSTS
PROJECT LEADERS

£4,500-£8,500

A branch of the largest supplier of DEC mini-computers in Europe require experienced computer staff to design and implement commercial systems using on-line techniques on DEC hardware.

A knowledge of RSTS, BASIC, DIBOL, COBOL and SQUASH is desirable. Don't let your knowledge of other machines prevent you learning something new.

Our offices are in Thames Ditton, Surrey, which gives easy access to London and the South East where most of our projects are concentrated.

Other benefits include Contributory pension scheme, travel expenses and discretionary bonus scheme.

For more information and application form please write to Gamma Business Systems, 27 High Street, Thames Ditton, Surrey, or ring Tony Simpson, 01-398 7235 (daytime) or 01-458 7493 (evenings).

BURROUGHS SOFTWARE PROGRAMMER

Woking-£5,225

Due to internal promotion we have an opportunity for a software programmer to take responsibility for, and to develop, a wide range of in-house software utilities.

Candidates with Burroughs medium systems experience should ideally have a sound knowledge of COBOL, a working knowledge of assembler and have worked in a data communications environment.

The current B3700 equipment is to be supplemented by a B2815 in Oct. 1978. Company benefits include flexitime, free lunches and modern working conditions.

For an application form please contact **Marguerita Baldock, Personnel Officer, B.A.T (UK AND EXPORT) LTD., Export House, Woking, Surrey GU21 1YB.**

B·A·T (U.K. AND EXPORT) LIMITED

SYSTEMS ANALYST

— up to £8,000 p.a.

— BRISTOL AREA

HERON

— with at least one year of commercial systems analysis experience.
— with proven abilities to solve complex and ill-defined problems and implement the solutions.

Our expanding DP department requires an enthusiastic and competent systems analyst to work in the Bristol area on on-line applications. Applicants, providing they meet the basic requirements, can look forward to being given full training where applicable.

The Corporation is currently seeking to expand and diversify its data processing activities into full on-line processing using mainframes and mini computers. This promises interesting and varied career prospects for the right person who takes this opportunity of joining now, both inside and out of Data Processing.

Please apply to T. A. Hewitson — Data Processing Manager

Heron Corporation Limited
19 Marylebone Road
London NW1 5JL
01-248 1315

Interviews will be held in Bristol and London

Heron Corporation Limited

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CONTROL DATA, producer of the world's largest computers and leader in providing total computer services throughout the world has immediate openings at its Cybernet Centre Europe in Brussels for

Systems Software Analyst
Trainee Software Analyst

Candidates should have experience in maintenance of operating systems software for large scale computer systems and in a high level language.

CONTROL DATA is expanding its CALL 370 time-sharing service which is run on Control Data IBM compatible mainframes and has openings for

Applications Analyst

for Customer Services

Candidates should have experience with maintenance of applications packages in a time-sharing environment. Experience on IBM machines is desirable but not essential.

Systems Engineer

Candidates should have experience in assembler plus OS/VS or MVS for maintenance of operating systems software on medium scale IBM 370 systems.

For all openings, English is essential and knowledge of French or Dutch desirable. The company offers to successful applicants good working conditions as well as an attractive package of compensations plus legal and extra legal benefits.

Please send detailed c.v. to:
Control Data
Cybernet Europe Inc.
Attn.: Personnel Department
Raketstraat 50 rue de la Fusée,
1130 Brussels.

CONTROL DATA
CYBERNET EUROPE INC.
the challenges of tomorrow today

University of Bristol

Applications are invited for the post of

TEACHING ASSISTANT IN COMPUTER SCIENCE

within the Department of Mathematics tenable from 1st October, 1978. The successful candidate will provide assistance with the various computing courses provided for undergraduates including some program advisory work and the writing of programs for use in teaching within the Department.

Applicants should have an Honours Degree preferably in Computer Science, and also programming experience in both a high-level language and assembler.

The salary for the appointment will be £3,189-£4,601 p.a. or £3,860-£5,282 p.a., the initial placing depending on age, qualifications and experience. Applicants with a relevant Ph.D. can expect to be appointed on the higher scale.

Further particulars may be obtained from The Secretary, University of Bristol, Senate House, Bristol BS8 1TH, to whom applications should be sent by 28th July, 1978.

SYSTEMS ANALYSTS PROGRAMMERS OPERATORS
Register with a company who want to work for you!
Ring:
VIP CONSULTANTS INTERNATIONAL
(Agency)
01-481 3266
Don't sit on the fence!

SALES £12K+
SUPPORT £8K+

Computer Automation is the world leader in minicomputer technology and the Naked Mini Division requires additional staff based from the European Headquarters in Hertfordshire.

Sales professionals who have a proven track record and management potential are required to sell our expanding range of OEM minicomputers in all parts of the country.

Support consultants who have experience of pre/post sales situations are required to cover the whole spectrum of systems support from hardware configuration to operating systems and language compilers e.g. Assembler, BASIC, COBOL, FORTRAN.

Benefits for these career opportunities include Company Car, Pension scheme, Life Assurance and Private Medical Insurance.

Please send CV or telephone Niel Clements on Rickmansworth 71211 or write to:

CA

ComputerAutomation
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Hertford House, Denham Way,
Rickmansworth,
Hertfordshire WD3 2XD.

ENGINEER
(COMPUTER APPLICATIONS)

Salary £4,344 - £5,065 p.a.
Pay Award 1st July, 1978

To work in a team which provides software and user support for Transportation and Civil Engineering applications on a Univac 1100 - 11 computer. Some work on a real-time Traffic Signal Control System may be involved from time to time. Applicants should be of degree standard with several years' appropriate experience. Salary is inclusive of phase I and phase II pay supplements. Temporary housing may be available. Relocation expenses payable up to £575 plus a lodging allowance in appropriate circumstances.

Application forms and further details from the County Engineer & Surveyor, County Hall, Glenfield, Leicester, LE3 8RJ. Telephone Leicester (0533) 871313, ext. 7422.

Closing date Monday, 7th August, 1978.

DISCUS [redacted] DCSL

DCSL

Is a successful bureau and software house using both mainframe and minicomputers of various makes. Due to expansion of our services the following staff are required

SYSTEMS ANALYST/ SNR. PROGRAMMER
Circa £5,750

Responsible to a senior systems analyst for the detailed design and implementation of mainframe and mini-computer systems, often on clients' premises.

PROGRAMMING TEAM LEADER
Circa £5,500

Responsible for the control of a programming team working on the bureau Honeywell & MCR mainframes in our Manchester Office.

PROGRAMMERS
Up to £5,000

To work with mainframe and mini computers, often on clients' premises; some time spent away from home should therefore be anticipated.

Applications with brief career details to
D. R. Brown, Director
DISTRIBUTION COMPUTER SERVICES LTD.
High Field House
High Field Road Levenshulme
Manchester, M19 3LM
Tel. 061-224 3274

DISCUS [redacted] DCSL

COMPUTER CAREERS IN SINGAPORE
WITH
SINGAPORE AIRLINES

The Company currently operates three large scale IBM 360 computers which will be progressively replaced by newer and larger computers beginning this year. Many new real-time and batched applications are being planned for implementation in the next few years. To cope with this expansion we need several computer professionals to join the Company's data processing team.

Singaporeans and Malaysians are invited to apply for the following positions

APPOINTMENT	REQUIREMENTS
SENIOR SYSTEMS ANALYST SENIOR SYSTEMS PROGRAMMER SYSTEMS ANALYST SYSTEMS PROGRAMMER	University Graduate with at least two years' experience in systems and programming work.
DATA BASE ADMINISTRATOR COMMUNICATIONS ENGINEER	University Graduate with at least two years' experience in computer and/or communications work.

Salary will be commensurate with qualifications and experience with the salary scale S$1050 x 60 — S$1650/S$1725 x 75 — S$2400 per month.

Attractive fringe benefits include
★ Free travel on company services during annual leave and concessional travel on attractive terms on other carriers;
★ Free medical and dental treatment; and.
★ Annual wage supplement equivalent to one month's basic salary.

A team will be in London during the last week of July, 1978, to conduct interviews.

Interested eligible applicants should contact

Administration Department
SINGAPORE AIRLINES LIMITED
580-586 Chiswick High Road
London W4
Tel: 01-995 4901

for an appointment. Applicants should bring their letters of application and relevant documents to the interview.

FREELANCERS

Have you good experience of
ICL 2950
CICS or TASKMASTER
BURROUGHS 6700
MINI ASSEMBLER (COMMUNICATIONS)

RING JIM TAYLOR ON:
01-531 9131

BREAK INTO SALES

Circa £7,000 p.a.

If you have sound knowledge and experience within a computer room, our clients will give you full sales training.

Phone D. D. Linstead on 01-499 5308

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

NEW SYSTEMS

BEDFORDSHIRE

PROGRAMMERS c £4,500
ANALYST/PROGRAMMERS c £5,300

Having employed their IBM 370/125 for highly specialised marketing systems covering their range of products, our client, a division of a major British Company, is now about to embark on the development of a complete range of commercial systems.

This is an ideal opportunity for keen data processing professionals to become involved at the initial stages of projects and see these to successful implementation. It is expected the first phase will incorporate STOCK RECORDING, SALES AND STATISTICS, and LEDGERS and it is envisaged that this will be part of a total Management Information System.

The positions offer the opportunity of joining project teams and becoming actively involved in applications from feasibility study to successful implementation. A sound COBOL or ASSEMBLER background is a prime requirement for success in these roles.

Apart from attractive salaries and prospects, the company also offer very favourable relocation expenses and other fringe benefits.

Ref. NB/1307

24-hr. answering service
Please telephone for a confidential discussion or write to: MYRIAD APPOINTMENTS LIMITED, 30 Fleet Street London EC4Y 1AA 01-353 0981

STRATHCLYDE
REGIONAL COUNCIL

GLASGOW SUB-REGION
Education Department

Applications are invited for both undernoted posts in the Computer Unit at Glasgow College of Technology, Cowcaddens Road, Glasgow G4 0BA.

USER SERVICES MANAGER Ref. G383
Salary Scale — SO2 — £5883-£6063 plus supplement of £820 per annum

The successful applicant should be a Graduate with substantial programming experience, preferably in educational computing services. DEC 10 or DEC 20 experience an advantage

SYSTEMS PROGRAMMER Ref. G384
Salary Scale — APV — £4548-£4968 plus supplement of £820 per annum

The successful applicant should be a Graduate or equivalent with systems programming experience, preferably on DEC 10 or DEC 20 systems.

Application forms may be obtained from The Assistant Director of Manpower Services, 21 Gordon Street, Glasgow, G1 3PE, to whom completed forms, quoting appropriate Ref. No. should be returned by 21st July, 1978.

R. M. O McCULLOCH
Director of Manpower Services

DATA CONTROLLER

Can you combine a proven flair for detailed work and full responsibility to Customers?

Send CV to M. D. Wegner, Professional Data Services Ltd., 4 New Burlington, London W1X 1FE.

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£4000 to £8500
Manufacturers & Systems Houses need mini or micro people
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Zeus-Hermes

Thursday 13 and Friday 14 July (noon to 8.30 p.m.)

Did you see our advertisement last week? If so (or if not), this is just a reminder to come and see us at 2-10 Copper Street, London WC1, if you want an attractive position in mini-computer software.

Or ring 01-323 0837 Charlie Ebbutt

I require urgently

PROGRAMMERS

with one year's IBM Cobol, unlimited prospects to £5,000 p.a.

Interviews any time, anywhere

01-505 5576
24 hours

AMPEX

COMPUTER SALES ENGINEERS

Ampex, world leader in the manufacture and marketing of a complete range of memory systems and media, needs additional sales engineers due to the continuing growth of the Computer Products Division based at Reading. We are looking for sales oriented people who have a background in computer peripherals and/or systems to sell magnetic disc, tape and core memory products throughout the United Kingdom.

This is an opportunity to work with a dedicated and progressive Sales team, with excellent career prospects, competitive salary and substantial commission earnings plus company car. We also offer a comprehensive Pension and Life Assurance Scheme.

Please apply for application form to Mrs. J. R. Feaver, Personnel Manager, Ampex Great Britain Limited, Acre Road, Reading, Berks. Telephone Reading 85200.